7. Common Services

The FOS includes tools that facilitate ordinary tasks and services. These tools provide the following capabilities:

a. E-mail.
b. Event Message Monitoring via the Local and Global Event Display windows.
c. Message generation via the Quick-Message Generator. Messages are displayed on the global Event Display window.
d. User customization.
e. File transfer via the Data Mover.
f. Browse on-line documentation via the Document Reader.
g. Help.
h. Snapshots.
i. Display page definition via the Display Builder.
j. Room definition via the Room Builder.
k. Telemetry monitoring.
l. Room building.
m. Report generation.
n. Replay archived telemetry data.
o. Create Schematic Dynamic Pages with RTWorks.

7.1 E-mail

Z-mail is commercial electronic mail software that helps you compose, send, and receive electronic mail.

7.1.1 Compose a Mail Message

1. **Open Z-mail**.

   Click **Tools...** on the Control window or Command Control window to open the Tools selection dialog box. Select **E-Mail** from the list of tools and click **OK**. The Z-Mail Login window opens. Log in to Z-mail by entering your user name and password.

   The Z-mail window opens (see Figure 7.1.1-1).

2. **Start a new message**.

   Select **Compose New...** from the Compose menu. The Compose Message window opens (see Figure 7.1.1-2).

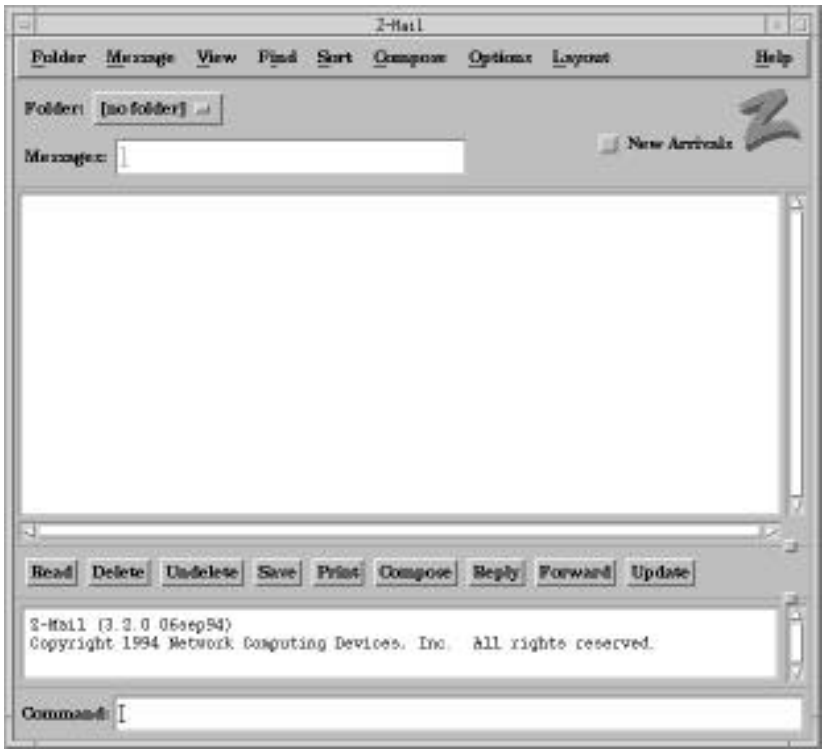


Figure 7.1.1-1. Z-Mail Window

3. **Add one or more recipients**.

   Type the internet address for an addressee in the To: box and press <Enter>. Repeat this step to add additional recipients. To add a recipient as a copy to or blind copy to, select **Cc:** or **Bcc:** from the **To:** pull-down menu.

4. **Type the message subject and text**.

   Type a subject in the Subject: box. Type the text of the message in the message entry box. To edit text in the message, use the **Cut**, **Copy**, and **Paste** options under the Edit menu.

5. **Attach a file to the message**.

   Click **Attachments** to open the Attachments dialog box. Select the directory from the Directory pull-down menu, highlight a file from the list of files, and click **Attach**. To edit the attached file, click **Edit**.

6. **Send the message**.

   Click **Send**.

7. **Save the message**.

   Select the message from the list in the Z-Mail window and click **Save**.

   or

   Deleting the message by highlighting the message and clicking **Delete**.

Figure 7.1.1-2. Compose Window

7.1.2 Receive and Reply to a Mail Message

Messages sent to your Internet mail address will be routed to your inbox.

1. **Open a message**.

   Double click on the message in your inbox or select **Read** from the Message menu.

2. **Reply to the message**.

   Click **Reply** and type the text of your reply in the message entry box.

3. **Add or remove a recipient to your reply**.

   a. **Remove an addressee**.

      Click on their address and click **Delete** or select **Cut** from the Edit menu.

   b. **Add an addressee**.

      Type the address in the **To:** box.

4. **Attach a file to the reply**.

   Click **Attachments** to open the Attachments dialog box. Select the directory from the Directory pull-down menu, highlight a file from the list of files and click **Attach**. To edit the attached file, click **Edit**.

5. **Send the reply**.

   Click **Send**.

6. **Save the message**.

   Click on the message and click **Save**.

   or

   Delete the message by clicking **Delete**.

7.1.3 Minimize or Close Z-Mail

To periodically check your mail without logging on, minimize Z-mail by clicking the minimize icon (i.e., the button that looks like a period in the top left corner of the Z-Mail window). Close Z-mail by clicking the top left corner of the Z-Mail window and selecting **Close** from the menu.

7.2 Event Message Monitoring

The FOS generates and displays event messages - informational text messages generated by processes running at the EOC or IST. Event messages can indicate user actions, limit violations, and spacecraft and instrument status. Event messages are categorized by spacecraft ID (i.e., AM1) and event types (i.e., RMS).

To open a Local or Global Event Display window:

The Local Event Display window displays events occurring on the userstation. The Global Event Display window displays events from the EOC, ISTs, the spacecraft, and instruments. Open the Local or Global Event Display window by clicking **Tools...** at the bottom of the Control window. The Tool Selection dialog box opens. Select **Local Event Display** (see Figure 7.2-1) or **Global Event Display** (see Figure 7.2-2) from the list of tools and click **OK**.

To manipulate the Event Display window:

The Local and Global Event Display windows contain a timeline and scrolling chronological list of event messages. The list includes the time, spacecraft ID, or "none" (for events that are not spacecraft-specific), the FOS subsystem generating the event message, string ID, and event message text. The event timeline contains a color-coded tick mark for each event in the listing. Selecting the tick mark in the timeline automatically highlights the associated event message.

To remove the event timeline from the Event Display window and enlarge the scrolling events display, click **GRAPH**.

To freeze the scrolling Event Display window, click **LOCK SCRN**. To restore the scrolling Event Display, click **REALTIME**.

To zoom in and out of the Event TimeLine:

To focus on events occurring in a specific time range, use the mouse to point and drag over a time range in the timeline. A small magnifying glass appears to the left of the time-line and the selected time range becomes the timeline's new start and stop times. To zoom out and restore the view of all events in the timeline, click the magnifying glass to the left of the timeline. The zoom out state is the timeline's default state.

.

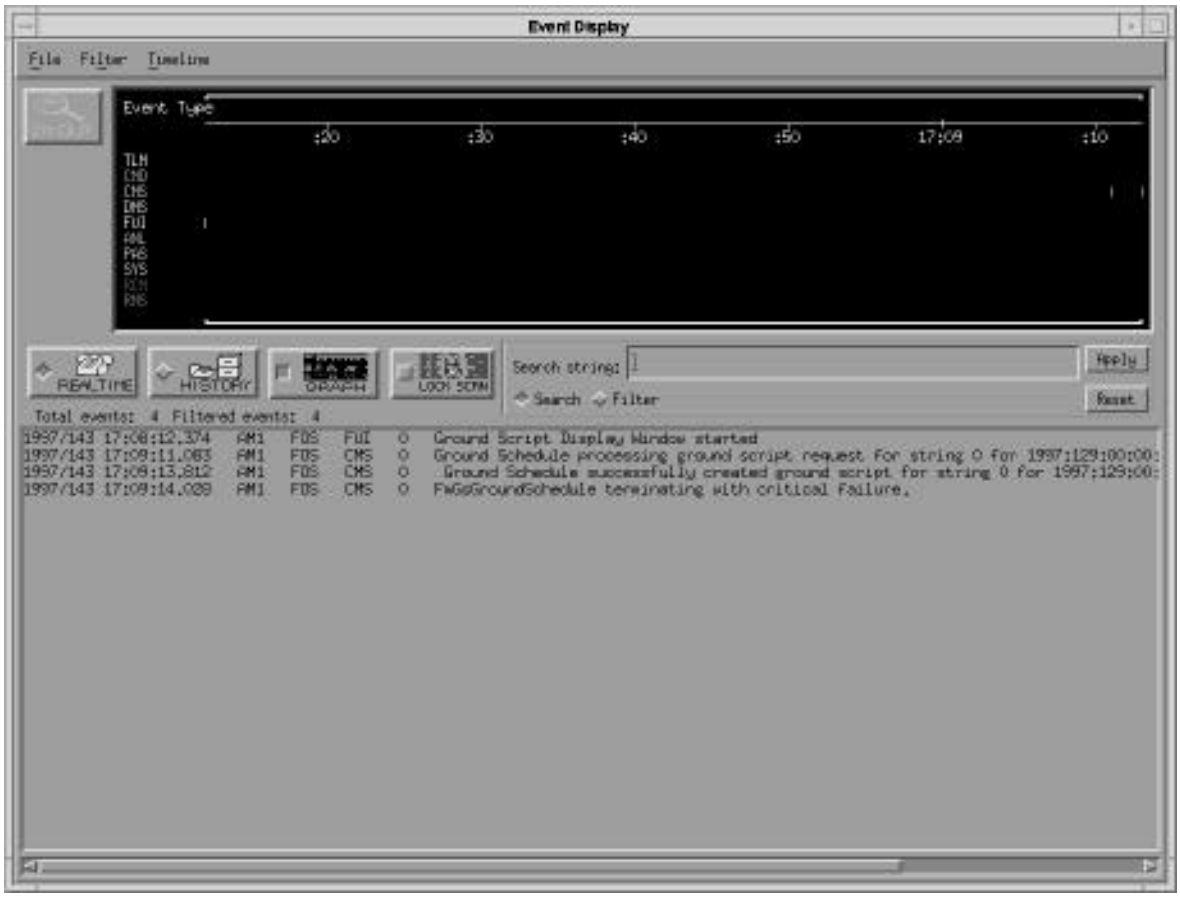


Figure 7.2-1. Local Event Display Window

7.2.1 View Real-Time Event Messages

Real-time events are displayed on all userstations with an active Event Display window. The timeline displays events as they occur, beginning with the first event after the Event Display is active on the userstation.

The Control window displays the three most recent event messages in the Events list box. These event messages are color-coded as one of four message types: information - black lettering on gray background; warning - black lettering on yellow background; alarm - red lettering on black background; or fatal - white lettering on black background. Alarm messages blink on the screen until acknowledged. To acknowledge an alarm message, click the blinking message in the Control window and click **ACK**.

7.2.1.1 Monitor System Event Messages

Tivoli, a COTS product, monitors system resources and generates event messages when EOC resources fall outside specified threshold values. These event messages are displayed via the Global Event Display window. Although Tivoli is configured when the FOS software is delivered,

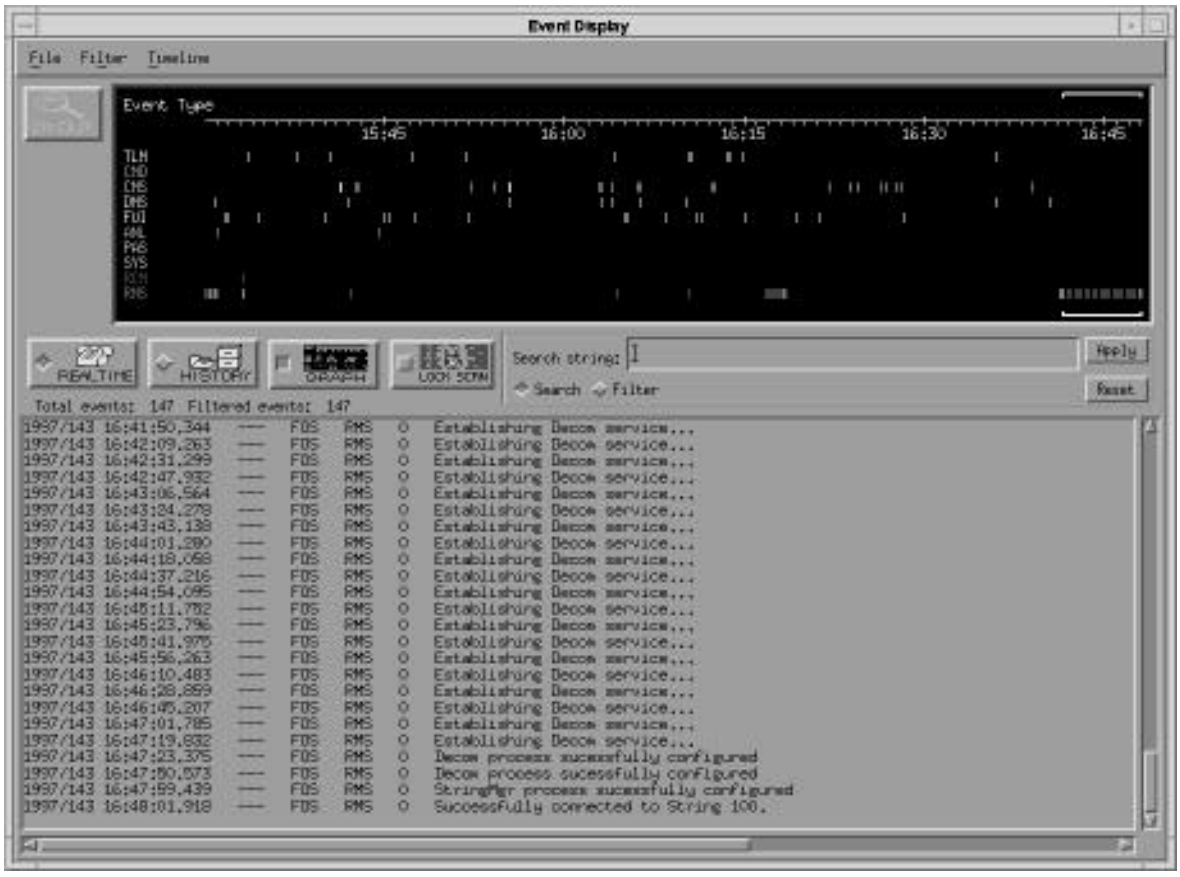


Figure 7.2-2. Global Event Display Window

the System Administrator may reconfigure Tivoli to monitor additional or different system resources, specifying threshold values, polling intervals, and event messages for monitored resources. System Administrators should refer to Tivoli documentation and the EOC Configuration Manual for instructions on configuring Tivoli. Table 7.2.1.1-1 lists sample events that Tivoli could be configured to monitor, as well as corresponding threshold limits and polling intervals.

Table 7.2.1.1-1. Sample Tivoli Events (1 of 2)

Event	Polling Interval (minutes)
COTS Application Resources:	
Sybase daemon goes down.	1
Sybase daemon goes up.	5
Tivoli daemon goes down.	7
Local Tivoli database has less than 10 MB available.	17

Table 7.2.1.1-1. Sample Tivoli Events (2 of 2)

Event	Polling Interval (minutes)
Tivoli daemon comes up.	19
File System Resources:	
Local disk partition (/usr/var/data/opt/tmp) has fewer than 150 inodes available.	11
Local disk partition has less than 15 MB available.	13
Number of bad NFS calls increases 10%.	23
System Resources:	
Host goes down.	1
Host comes up.	1
Available swap space decreases below 20 MB.	11
CPU utilization is greater than 95%	11
Pageouts increase beyond 80%	11
More than 10 zombie processes on the host.	59
Network Resources:	
Client RPC bad calls increase 10%.	29
Client RPC timeouts increase 10%.	31
Ratio of network collisions per output packet increases more than 5%.	37
Number of input packet errors increases 10%.	41
Number of output packet errors increases 10%.	43
Printers:	
Availability of print queues.	7

7.2.2 Open and Save Events

Events being displayed in the Event Display window may be saved in ASCII format by selecting **Save** or **SaveAs** from the File menu. To open a saved event file, select **Open** from the File menu.

7.2.3 Access the Event History Archive through Netscape

To access a complete event archive of global event message history, submit an FOS Event History form:

1. Start Netscape and type in the URL for the FOS Event History form (see Figure 7.2.3-1), http://198.118.199.20/FosDbHome.html.

2. Enter criteria in the event history form fields to search by start and stop times, event type, event identifier, spacecraft ID, instrument (subsystem) identifier, or a combination of these fields. Leaving the form blank returns all events in the database.
3. Click **Submit**.
4. A Netscape page is returned which displays event messages matching the criteria entered in the event history form field (see See Figure 7.2.3-2).

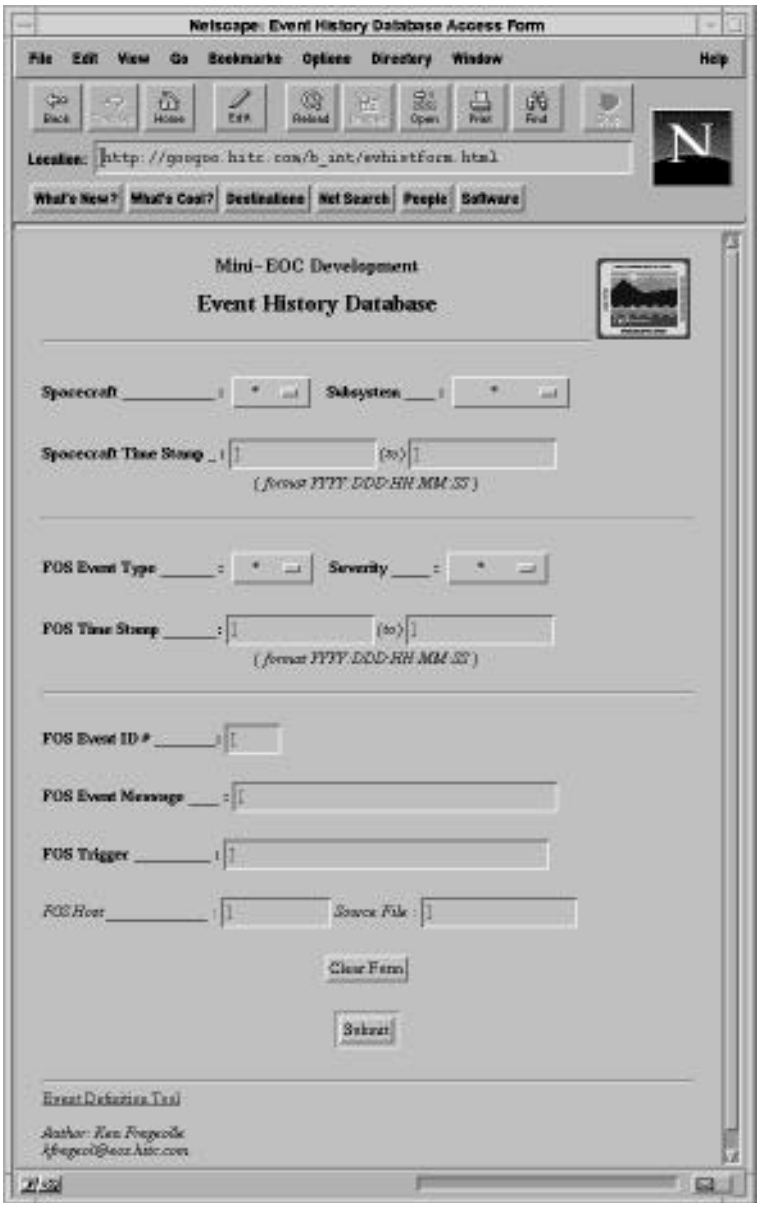


Figure 7.2.3-1. FOS Event History Form

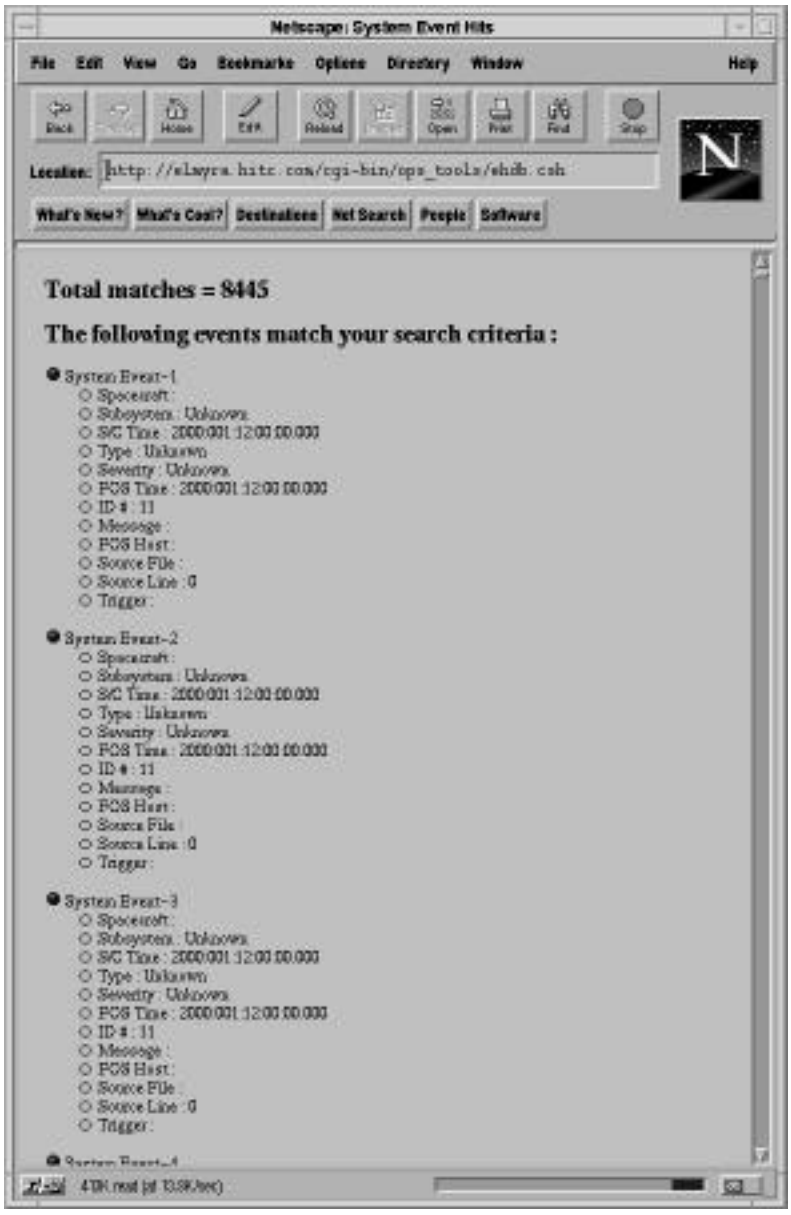


Figure 7.2.3-2. FOS Event History Report

7.2.4 Access Event History through the HISTORY button

1. Click **HISTORY** on the Event Display window.

   The Time Range Dialog box opens (see Figure 7.2.4-1).

2. Enter the start and stop times to search event history. Click **OK**.

   The Time Range dialog box closes and the events that occurred between the start and stop times are listed.

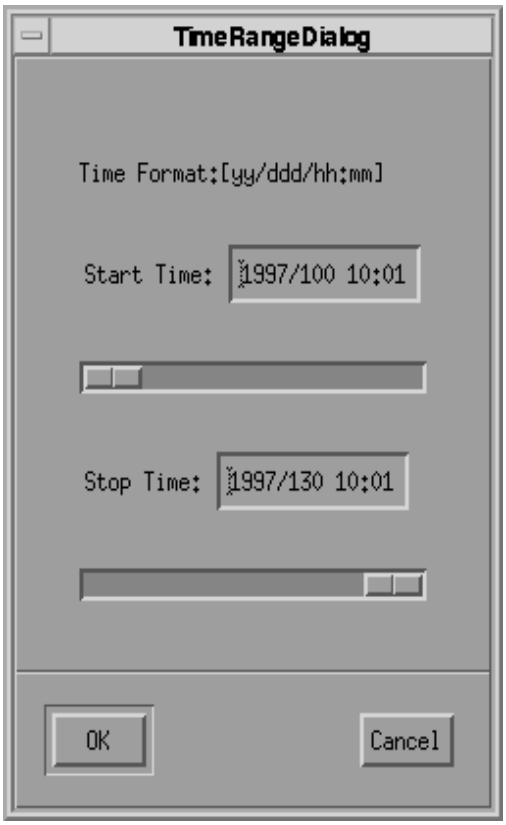


Figure 7.2.4-1. Time Range Dialog Box

7.2.5 Filtering Events

Events are filtered in order to focus on a particular type of event, or to monitor events generated by a designated subsystem or spacecraft. There are three methods of filtering events: selecting filtering options under the Filter or Timeline menus or clicking the **Filter** toggle box on the Event Display window.

7.2.5.1 Filter Events via the Filter Menu

Select a filter under the Filter menu of the Event Display window: **S/C ID** (Spacecraft ID), **Subsystem**, **Event Type,** or **String ID**.

To filter events by Spacecraft Subsystem:

Select **Subsystem** to activate the Subsystem Filter dialog box (see Figure 7.2.5.1-1). To display events associated with a particular subsystem, click in the box next to the subsystem name under the columns labeled **Bold** or **Show**. Select **Show** to display the events in the event display and timeline in the color indicated in the dialog box. Select **Bold** to display the events in the event display and the tick marks in a bolded font. Click **Apply** to activate your filter selections in the Event Display window. Close the filter dialog box by clicking **Close**.

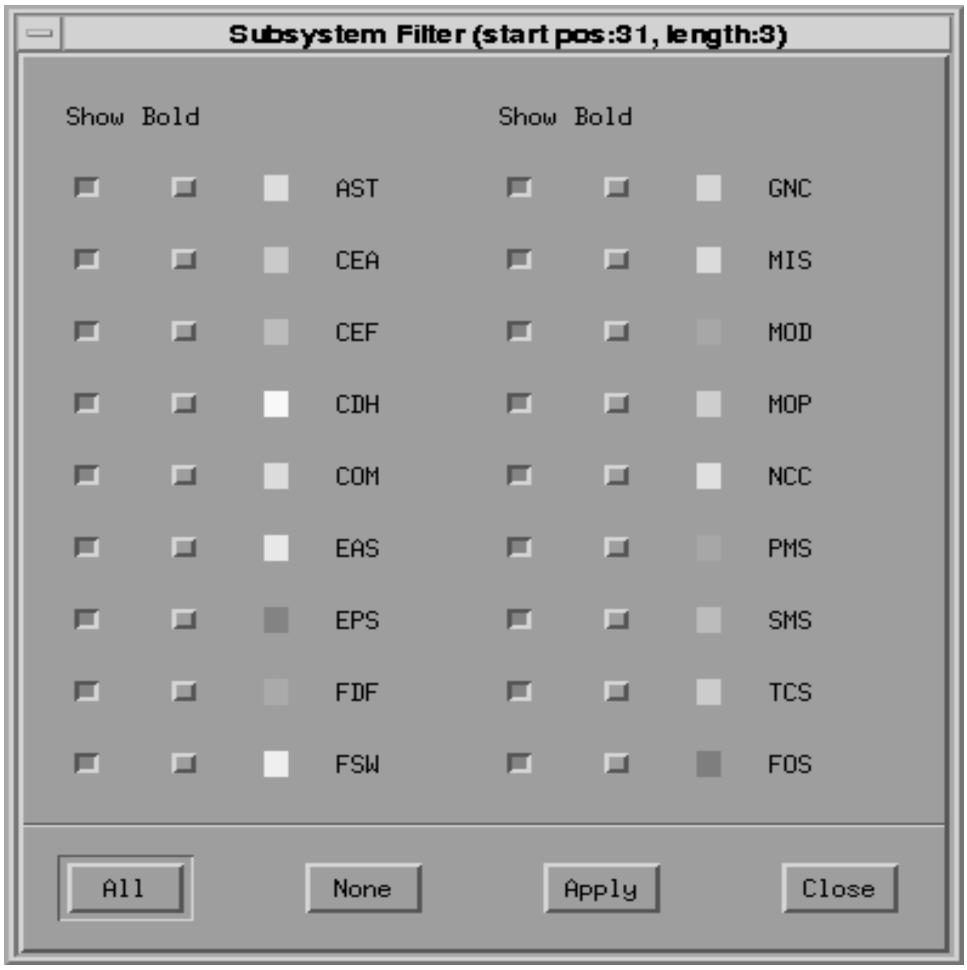


Figure 7.2.5.1-1. Subsystem Filter Dialog Box

To filter Events by Spacecraft:

Select **S/C ID** to activate the S/C ID Filter dialog box (see Figure 7.2.5.1-2). To display events associated with a particular spacecraft, click in the box next to the spacecraft name under the columns labeled Bold or Show. Select Show to display the events in the event display and timeline in the color indicated in the dialog box. Select Bold to display the event text in a bolded font. Click **Apply** to activate your filter selections in the Event Display window. Close the filter dialog box by clicking **Close**.

To filter Events by Event Type:

Select **Event Type** to activate the Event Type Filter dialog box (see Figure 7.2.5.1-3). To display events associated with a particular event type, click in the box next to the event type under the columns labeled **Bold** or **Show**. Select **Show** to display the events in the event display and timeline in the color indicated in the dialog box. Select **Bold** to display the event text in a bolded font. Click **Apply** to activate your filter selections in the Event Display window. Close the filter dialog box by clicking **Close**.

Figure 7.2.5.1-2. Spacecraft ID Filter Dialog Box

Figure 7.2.5.1-3. Event Type Filter Dialog Box

To filter Events by String:

Select **String ID** to activate the String ID Filter dialog box (see Figure 7.2.5.1-4). Select one or more string IDs to filter in the dialog box and click **OK**.

7.2.5.2 Filter Events via the Timeline Menu

Select **S/C ID**, **Subsystem,** or **Event Type** from the Filter menu of the Event Display window. The title and y-axis of the timeline changes to reflect the filter selected. Events on the timeline and scrolling event list are filtered on either spacecraft, subsystem, or event type.

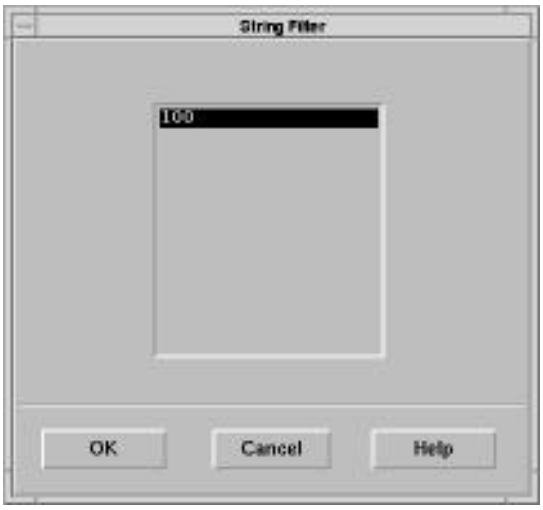


Figure 7.2.5.1-4. String ID Filter Dialog Box

7.2.5.3 Filter Events via the Filter Toggle Box

To filter events in the Event Display and Timeline, click **Filter** in the Event Display window. Enter text in the **Search String** field and click **Apply**. Events matching the text entered in the Search String field are displayed in the Timeline and Event Display. Click **Reset** to remove the filter and display all events.

7.2.6 Search for Events

To search for events in the Event Display window, click **Search** in the Event Display window. Enter text in the **Search String** field and click **Apply**. The first event matching the text entered in the Search String field is highlighted in the Event Display.

7.3 Quick-Message Generator

The Quick Message Generator sends messages (up to 240 characters) to every global event display active at your site. Messages are assigned one of four severity levels by the sender: information - black lettering on gray background; warning - black lettering on yellow background; alarm - red lettering on black background; or fatal - white lettering on black background.

Monitor the messages you send and receive via the Global Event Timeline, as described in the following text. The Global Event Timeline displays events from the EOC, ISTs, the spacecraft, and instruments. Messages are displayed on the Global Event Timeline in a color corresponding to the message's severity level.

Start the Global Event Timeline by clicking **Tools...** at the bottom of the Control window. The Tool Selection dialog box opens. Select **Global Event Display** from the list of tools and click **OK**. The Global Event Display window opens (see Figure 7.2-2).

7.3.1 Send a Quick Message

1. **Start the Quick Message Generator (see Figure 7.3.1-1)**.

Click **Tools...** at the bottom of the Control window. The Tools dialog box opens. Select **Global Event Display** from the list of tools and click **OK**. Select **Quick Message** from the list of tools.

2. **Enter a user name, subsystem or any character string**.

   Regardless of the text entered in the To: box, the event message will be displayed on every userstation at your location with an active Global Event Timeline.

3. **Assign a severity level to the message**.

   Click on the Severity menu and select the appropriate level - **Info**, **Warning**, **Alarm,** or **Fatal**.

4. **Type a message**.

   Enter a message less than 240 characters in the box below the To: and Severity boxes.

5. **Launch Netscape to a context-sensitive help page**.

   Click on **Help** to launch the Netscape browser to a context-sensitive help page.

6. **Send or cancel the message**.

   Click **Cancel** to discard the message or **Send** to send the message.

   The Event Message Generator closes.

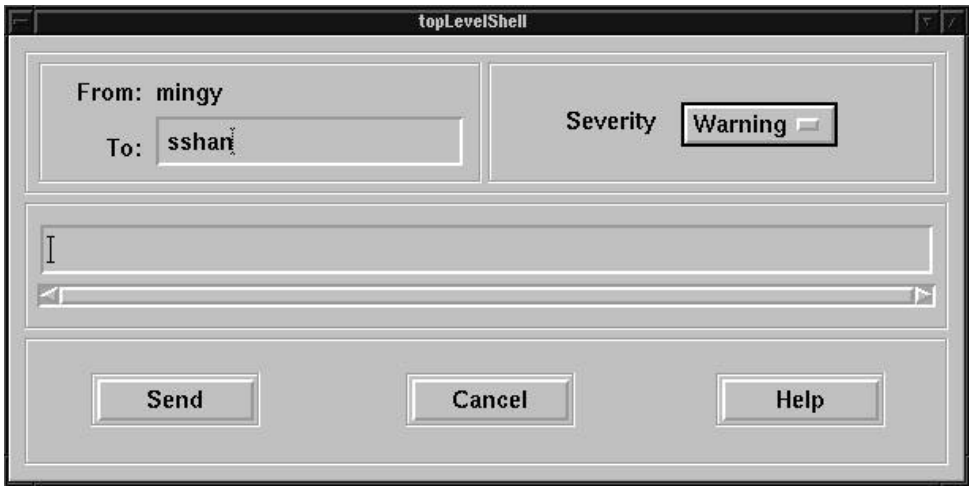


Figure 7.3.1-1. Quick Message Generator

7.4 User Customization

The FOS includes the capability to customize the user's environment by specifying fonts and window colors, selecting default printers, specifying data directories, associating function keys with ECL commands, associating the Control window room buttons with user-defined rooms, and establishing the background color for dynamic pages.

Open the User Customization window (see Figure 7.4-1) by clicking **Tools...** on the Control window or Mini Control window. When the Tool Selection dialog box opens, select **User Customization** from the list of tools and click **OK**.

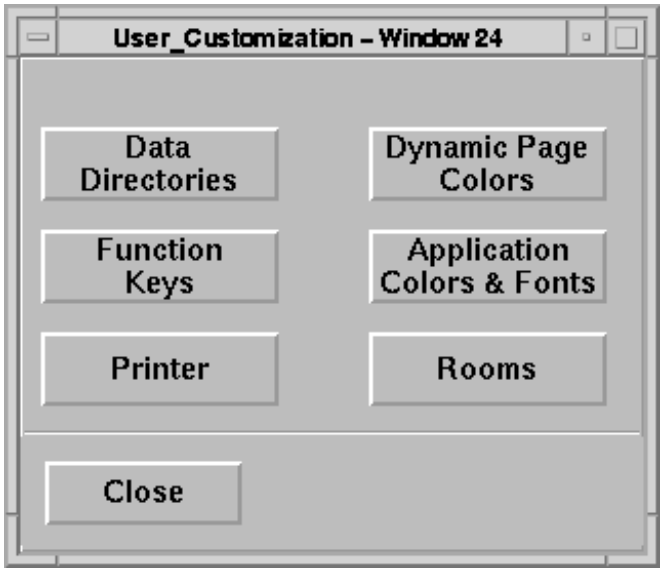


Figure 7.4-1. User Customization Window

7.4.1 Specify Fonts and Window Colors

1. **Open the Application Colors and Fonts Customization window (See Figure 7.4.1-1)**.

   Click **Application Colors & Fonts** on the User Customization window.

   The right portion of the Application Colors and Fonts Customization window, labeled Customization Preview, is a preview area where you can view the color and font changes before application.

2. **Set the foreground color**.

   Select **Foreground** from the Color Selector list box and drag the red, green, and blue slider bars to the left or right until the desired color is displayed in the preview area.

3. **Set the background color**.

   Select **Background** from the Color Selector list box and drag the red, green, and blue slider bars to the left or right until the desired color is displayed in the preview area.

4. **Set the top shadow color**.

   Select **Top Shadow** from the Color Selector list box and drag the red, green, and blue slider bars to the left or right until the desired color is displayed in the preview area.

5. **Set the bottom shadow color**.

   Select **Bottom Shadow** from the Color Selector list box and drag the red, green, and blue slider bars to the left or right until the desired color is displayed in the preview area.

6. **Select the monospace font**.

   Select a font from the list of monospaced fonts. The monospace font selected will update all monospace fonts.

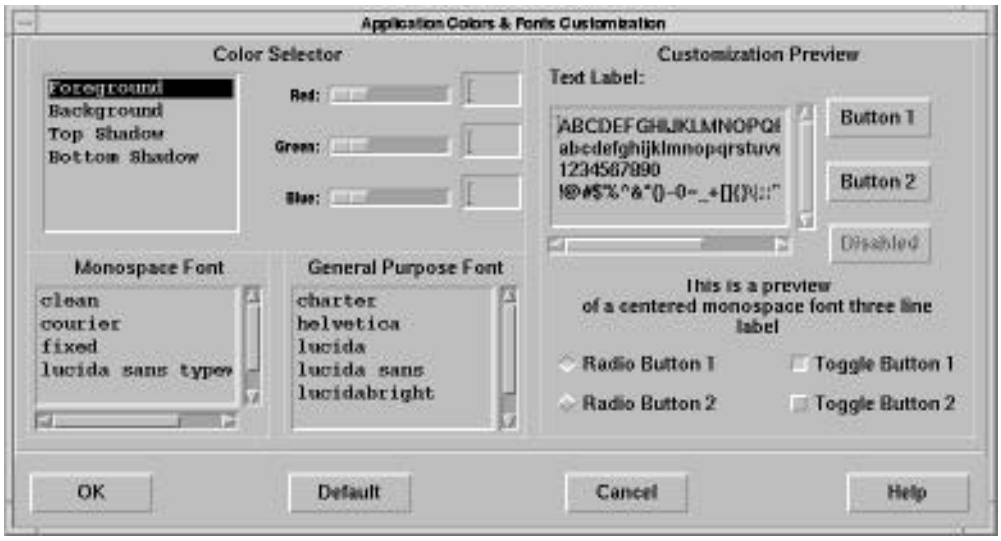


Figure 7.4.1-1. Application Colors and Fonts Customization Window

7. **Select the general purpose font**.

   Select a font from the list of general purpose fonts. The font selected will update all fonts except monospace fonts.

8. **Apply the window colors and fonts selected**.

   Click **OK**. The Application Colors and Fonts Customization window closes.

   or

   Return the window colors and fonts to their default settings.

   Click **Default**. The Application Colors and Fonts Customization window closes.

7.4.2 Associate the Control Window Room Buttons with Rooms

1. **Open the Room Customization window (see Figure 7.4.2-1)**.

   Click **Rooms** on the User Customization window.

   The list box on the left of the window labeled **Available Rooms,** lists system- and user-defined rooms. The list of numbered rooms on the right labeled **Selected Rooms** represents the rooms associated with the room buttons (list item one represents the room associated with **R1** on the Control window and so on through **R6**).

2. **Clear all rooms associated with the room buttons**.

   Click **Clear All**. If you do not wish to clear the room buttons, skip this step.

3. **Associate a room with one of the Control window room buttons**.

   Select the room from the **Available Rooms** list box which you wish to associate with a room button. Using the middle mouse button, drag the selected room to one of the five text fields labeled one through five.

   or

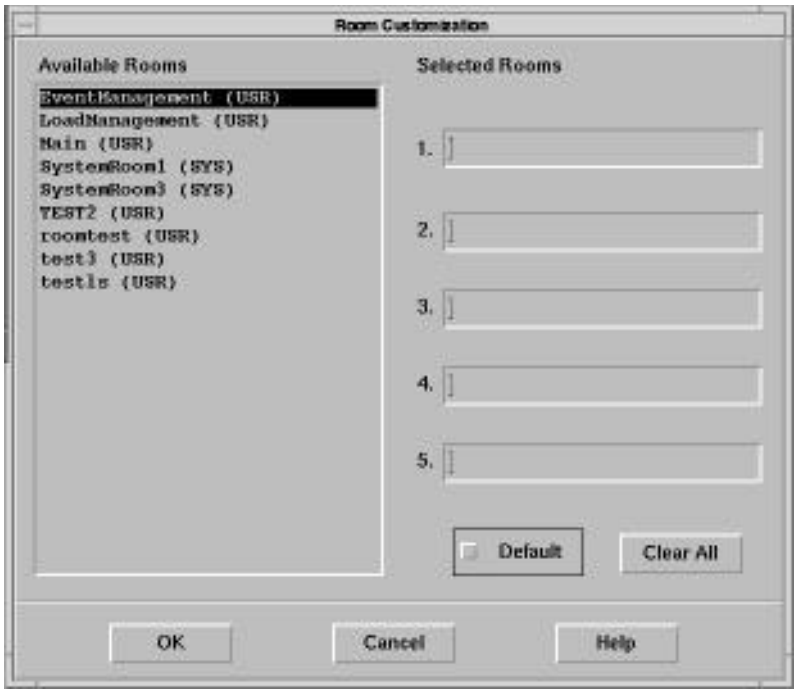


Figure 7.4.2-1. Room Customization Window

Associate a room with one of the Control window room buttons.

Double click the room in the **Available Rooms** list box to associate it with the first empty list box.

4. **Apply the rooms in the Selected Rooms list to the Control window room buttons for the current session only**.

   Click **OK**. The Room Customization window closes. After the current session, the rooms buttons will return to their default settings.

   or

   Establish the rooms in the Selected Rooms as the default settings for the Control window room buttons.

   Click **Default**. Click **OK** to close the Room Customization window.

   or

   Close the Room Customization window without updating the rooms associated with the room button.

   Click **Cancel**.

7.4.3 Establish the Background Color for Dynamic Pages

1. **Open the Dynamic Page Color Intensities Customization window (see Figure 7.4.3-1)**.

   Click **Dynamic Page Colors** on the User Customization window.

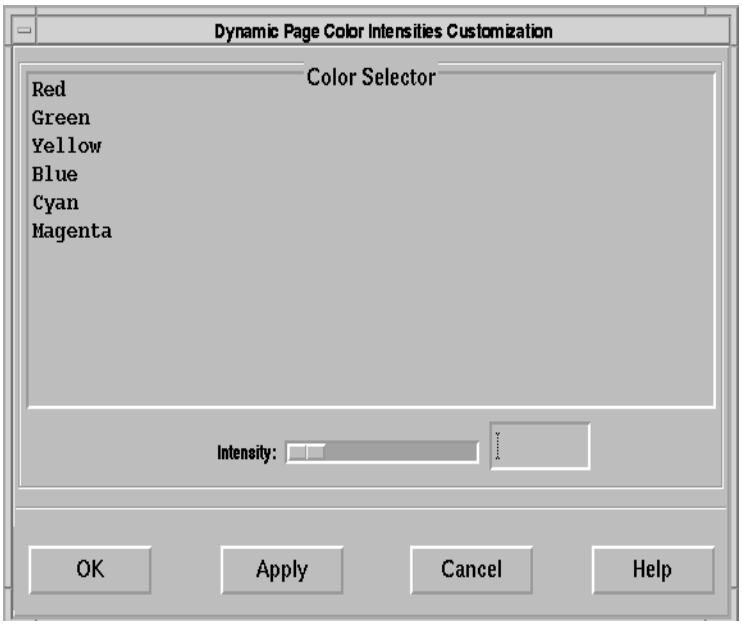


Figure 7.4.3-1. Dynamic Page Color Intensities Customization Window

2. **Select the background color for dynamic pages**.

   Select the color in the **Color Selector** list box. Drag the **Intensity** slider bar to the left or right respectively to lighten or darken the background color.

3. **Apply the selected background color**.

   Click **OK**. The Dynamic Page Color Intensities Customization window closes.

   or

   Apply the selected background color and leave the Dynamic Page Color Intensities Customization window open.

   Click **Apply**.

   or

   Close the Dynamic Page Color Intensities Customization window without updating the background color.

   Click **Cancel**.

7.4.4 Select a Default Printer

1. **Open the Printer Customization window (see Figure 7.4.4-1)**.

   Click **Printer** on the User Customization window.

2. **Enter the full directory path for the printer**.

   Enter the printer path in the **Printer** text field and press <Enter>. The printer selected is listed next to **Current Printer**.

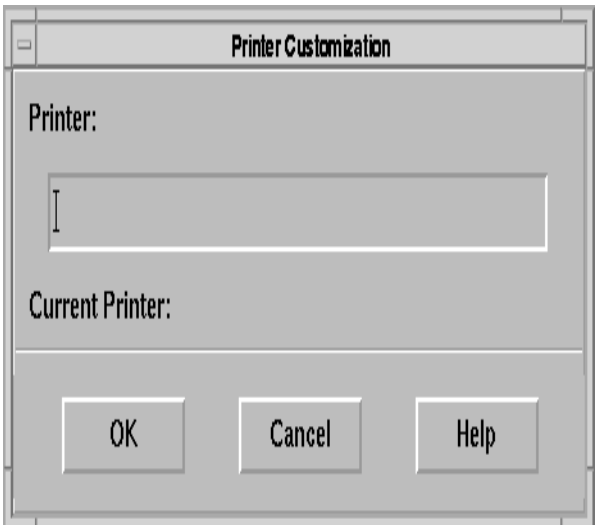


Figure 7.4.4-1. Printer Customization Window

3. **Establish the printer in the Printer text field as your default printer**.

   Click **OK**. The Printer Customization window closes.

   or

   Do not change the default printer.

   Click **Cancel**.

7.4.5 Assign an ECL Directive to a Function Key

1. **Open the ECL Directives Customization window (see Figure 7.4.5-1)**.

   Click **Function Keys** on the User Customization window.

2. **Select an unassigned function key to be associated with an ECL directive**.

   Select a function key from the **Function Key** pull-down menu.

3. **Enter the ECL directive to be associated with the function key.**

   Enter an ECL directive in the **ECL Directive** text field. Click **Add** to add the function key and directive to the table listing directives and their associated function keys. Repeat steps 2 and 3 to assign directives to additional function keys.

4. **Reassign a function key**.

   Select the function key in the table which you wish to associate with a different directive. Click **Modify**. The function key is listed in the **Function Key** pull-down menu. Update the directive in the **ECL Directive** text field and click **Add**.

5. **Remove the association between a function key and a directive**.

   Select one or more rows in the table listing function keys and their associated directives. Click **Delete**. The function keys you highlighted are removed from the table.

.

Figure 7.4.5-1. ECL Directives Customization Window

6. **Associate the directives with the function keys**.

   Select **OK** to update the function keys to the directives listed in the table. The ECL Directives Customization window closes.

   or

   Cancel changes made to function keys.

   Click **Cancel** to discard the latest changes made to the assignment of directives to function keys. The ECL Directives Customization window closes

7.4.6 Specify the Data Directory

The data directory is the default location for data files.

1. **Open the Data Directory Customization window (see Figure 7.4.6-1)**.

   Click **Data Directories** on the User Customization window.

2. **Specify the data directory**.

   Enter the path for the data directory in the **Directory** text box and click **OK**.

3. **Cancel the change to the location of the data directory**.

   Click **Cancel** to close the Data Directory Customization window and discard the data directory location change.

7.5 Data Mover

The Data Mover allows you to copy local files to a local or remote directory, delete local files, and copy remote files to a local directory.

Figure 7.4.6-1. Data Directory Customization Window

To open the Data Mover:

Open the Data Mover by clicking **Tools...** on the Control window or Mini Control window. The Tool Selection dialog box opens; select **Data Mover** from the list of tools and click **OK**. The Data Mover window opens (see Figure 7.5-1).

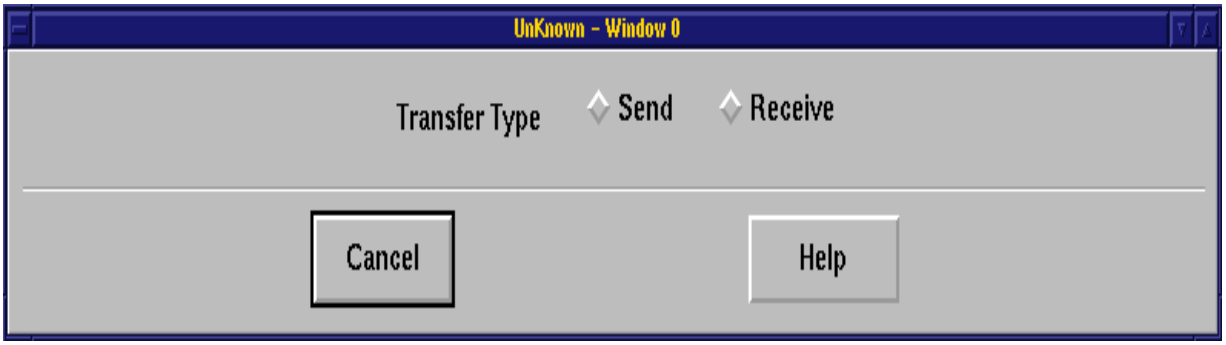


Figure 7.5-1. Data Mover Window

To access context-sensitive FOS help:

Click **Help** on any Data Mover window to launch Netscape to a context-sensitive FOS help page.

7.5.1 Copy Local Files to a Local Directory

1. **Select Send as the Transfer Type**.

   Click **Send**.

   The Data Mover Send window opens (see Figure 7.5.1-1). The Location pull-down menu reflects the default location, your local location. The Directory pull-down menu displays **Other** by default. The text field below the Directory pull-down menu displays the full path of your home directory. The box below the path lists the files in your home directory.

2. **Select the directory where the files are located**.

   Click on the Directory pull-down menu and select the directory where the files to be transferred are located.

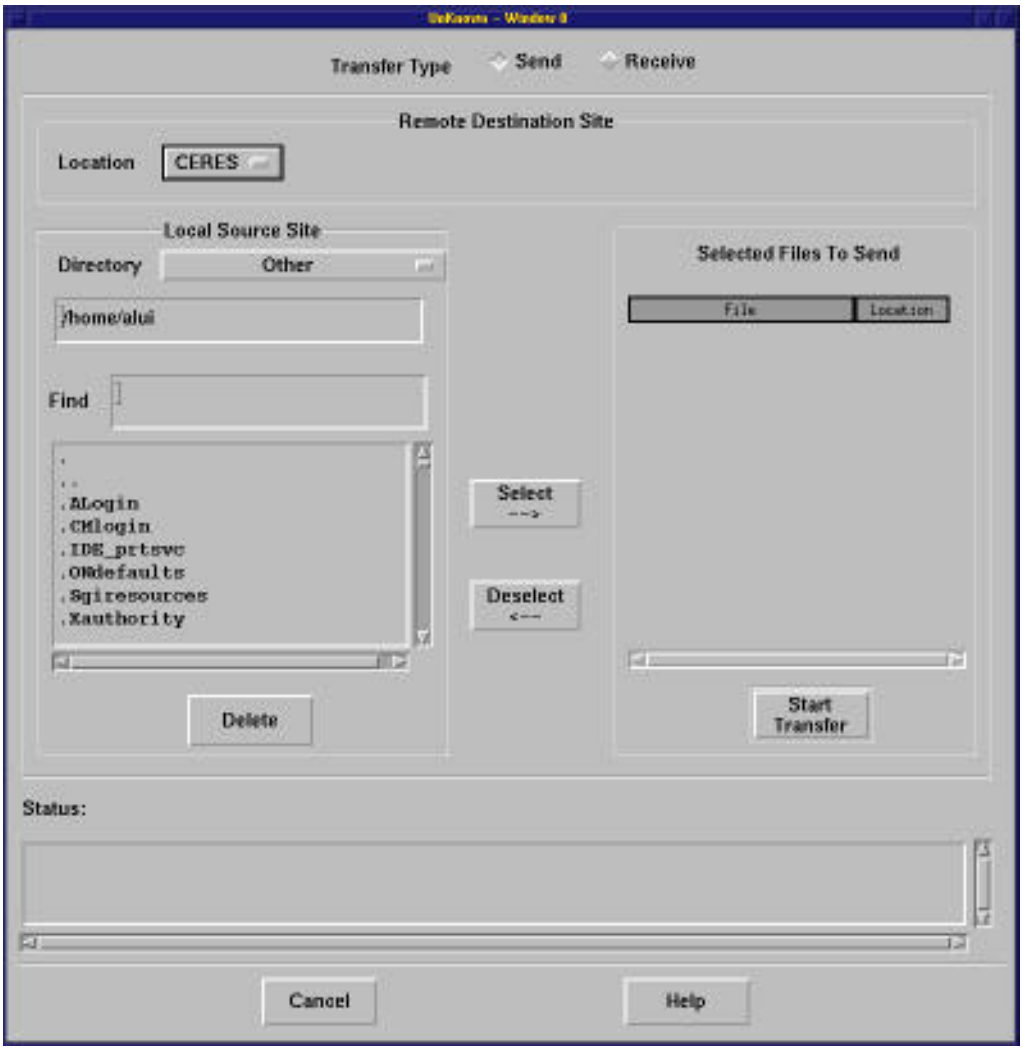


Figure 7.5.1-1. Data Mover Send Window

3. **Select the files to be transferred**.

   Click on the file name of a file to be transferred in the list of files and click **Select**. Repeat this process until all the files to be transferred are listed in the box entitled "Selected Files to Send." To deselect a file from the list of files, select the file name and click **Deselect**.

4. **Validate that the destination site reflects your local location**.

   Check that the location in the Location pull-down menu reflects your local location. The files will be sent to a local transfer directory.

5. **Start the transfer**.

   Click **Start Transfer**. The files in the Selected Files to Send are sent to the local transfer directory. The status of the file transfer process is provided in the Status text box at the bottom the Data Mover Send window.

7.5.2 Copy Local Files to a Remote Location

1. **Select Send as the Transfer Type**.

   Click **Send**.

   The Data Mover Send window opens (see Figure 7.5.1-1). If you entered a location and directory during the current session, the Location and Directory pull-down menus reflect the previously selected location and directory. The text field below the Directory pull-down menu is the full path for the previously selected directory. The box below the path lists the files in the directory.

   If this is a new session (i.e., you have started the Data Mover and have not entered a location or directory) the Location pull-down menu reflects your local location. The Directory pull-down menu displays **Other** by default. The text field below the Directory pull-down menu is the full path of your home directory. The box below the path lists the files in your home directory.

2. **Select the directory where the files are located**.

   Click on the Directory pull-down menu and select the directory where the files to be transferred are located.

3. **Select the files to be transferred**.

   Click on the file name of a file to be transferred in the list of files and click **Select**. Repeat this process until all the files to be transferred are listed in the box entitled Selected Files to Send. To deselect a file from the list of files, select the file name and click **Deselect**.

4. **Select the Remote destination**.

   Select the location where the files will be sent under the Location pull-down menu: **ASTER**, **CERES**, **EOC**, **MISR**, **MODIS**, **MOPITT**, **SDVF**.

5. **Start the transfer**.

   Click **Start Transfer**. The files in the Selected Files to Send are sent to the transfer directory established at the remote location for incoming files. The status of the file transfer process is provided in the Status text box at the bottom the Data Mover Send window.

7.5.3 Copy Files from a Remote Location

1. **Select Receive as the Transfer Type**.

   Click **Receive**.

   The Data Mover Receive window opens (see Figure 7.5.3-1). The Location pull-down menu reflects the default location, your local location. The Directory pull-down menu displays **Other** by default. The text field below the Directory pull-down menu is the full path for the default directory. The box below the path lists the files in the default directory.

2. **Select the remote location**.

   Select the remote location where the files to be copied are located under the Location pull-down menu.

3. **Select the remote directory where the files are located**.

   Click on the Directory pull-down menu and select the directory where the files to be copied are located.

4. **Select the files to be transferred**.

   Click on the file name of a file to be transferred in the list of files and click **Select**. Repeat this process until all the files to be transferred are listed in the box entitled, "Selected Files to Retrieve." To deselect a file from the list of files to be retrieved for transfer to the local directory, select the file name and click **Deselect**.

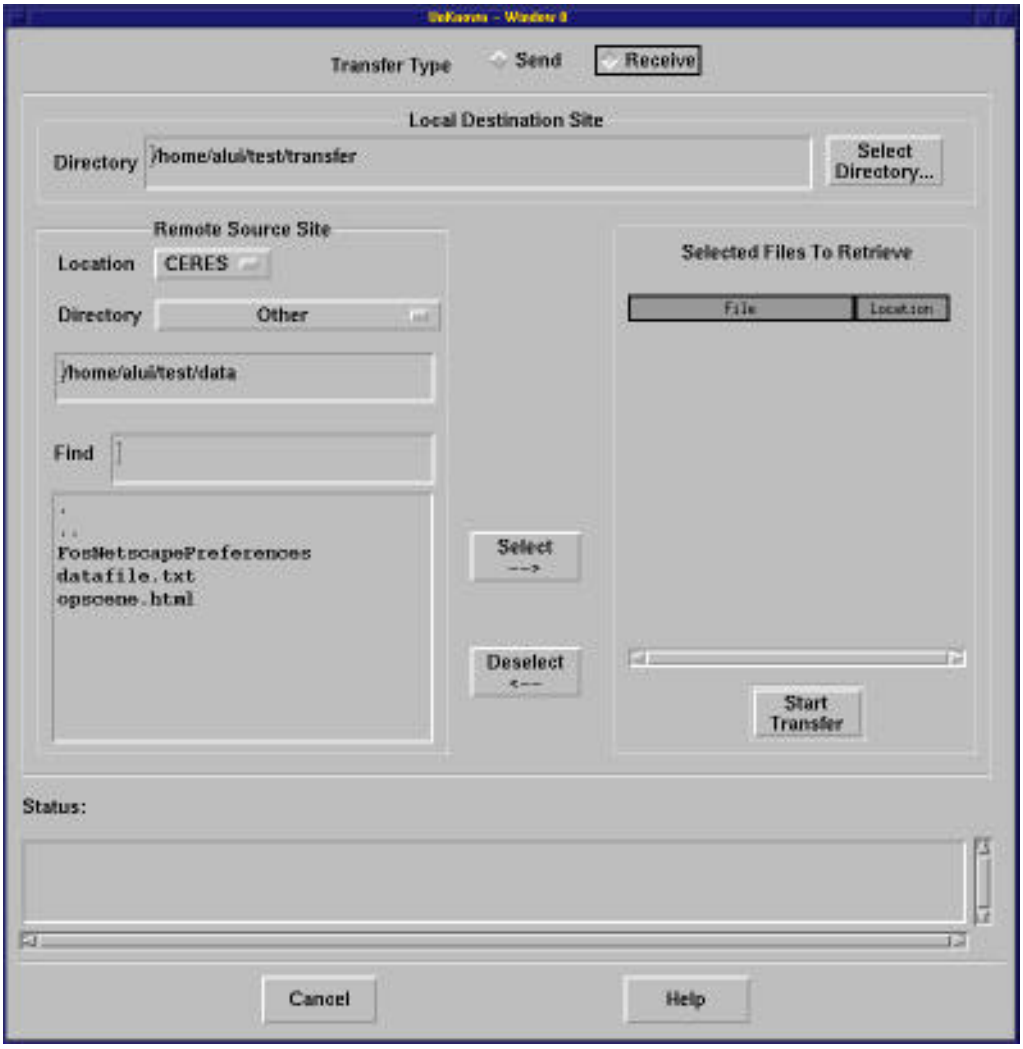


Figure 7.5.3-1. Data Mover Receive Window

5. **Select the local destination directory**.

   Click **Select Directory…**. The Data Mover Local Directory Selector window opens (see Figure 7.5.3-2). Select the destination directory under the Directory pull-down menu. The full path for the directory appears in the list box below the directory name.

.

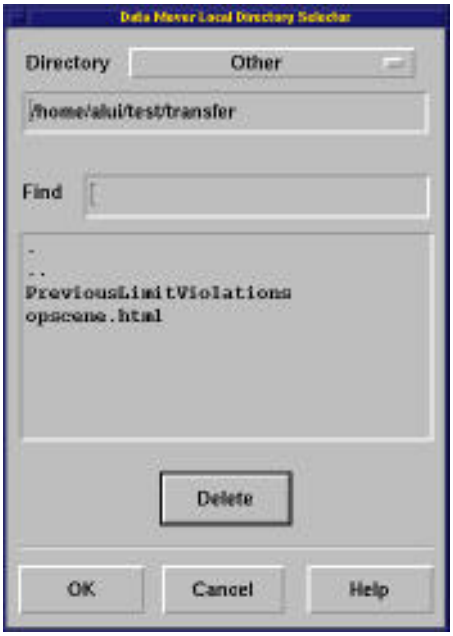


Figure 7.5.3-2. Data Mover Local Directory Selector Window

To find a directory or file, type filter criteria in the Find text box. To delete a file, select the file name in the list of files and click **Delete**. Once you have selected the path, click **OK**. The Data Mover Local Directory Selection window closes.

6. **Start the transfer**.

   Click **Start Transfer**. The files in the Selected Files to Retrieve are sent to the specified directory. The status of the file transfer process is provided in the Status text box at the bottom the Data Mover Send window.

7.5.4 Delete Local Files

1. **Select Send as the Transfer Type and select the directory where the files are located**."

   Follow steps 1 and 2 from section 7.5.1, entitled "Copy Local Files to a Local Directory."

2. **Select local files to be deleted**.

   Click on the name of a file to be deleted in the list of files and click **Delete**.

7.5.5 Close the Data Mover

Click **Cancel** on the Data Mover window.

7.6 Document Reader

Document reader enables you to browse, search, and print on-line documentation via the Netscape browser.

7.6.1 Browse a Document

1. **Open Document Reader**.

   Open the Document Reader by clicking **Tools…** on the Control window or Mini-Control window. The Tool Selection dialog box opens. Select **Document Reader** from the list of tools and click **OK**.

   The Netscape browser opens.

2. **Open a World Wide Web (WWW) page**.

   Select **Open Location** from the File menu. The Open Location dialog box opens. Type a Universal Resource Locator (URL)) in the open location text field and click **Open**.

   The home page you indicated by typing its address, opens.

3. **Open a text or html document listed as a link on a home page**.

   Click a link on a home page that gives you the option to open a document in text or html format.

   or

   Open a text or html file located on a local or disk drive.

   Select **Open File** from the File menu. The File dialog box opens. In the File dialog box, specify the file location and file type. Select the file from the list and click **OK** to close the File dialog box and open the file, or **Cancel** to close the File dialog box without opening the file.

4. **Scroll through the document**.

   Page up or down in the document by pressing the <Page Up> or <Page Down> button or by pressing the up or down arrows at the top and bottom of the slider bar.

5. **Find text in the document**.

   Select **Find** under the Edit menu. Type the text in the Find dialog box, select the direction to search (up or down), click the match case toggle box to make the search case sensitive, and click **Find Next**. The next occurrence matching the text you entered is highlighted. Click **Cancel** to close the Find dialog box or **Find Next** to locate the next string matching the text you entered. If no text is found matching your entry in the direction you are searching, a dialog box opens indicating the search string was not found.

6. **Save the document**.

   Select **Save As** from the File menu. The Save As dialog box opens. Select the folder to save the message in, select the file format from the Save files as type pull-down menu, and type a file name in the file name text box.

7. **Edit the document**.

   You cannot edit the document via the Netscape browser. Once you have saved the file, edit it using a text editor or word processing software.

8. **Print the document**.

   Specify the page setup by selecting **Page Setup** from the File menu. The Page Setup dialog box opens. Choose the setup options desired and click **OK** to apply the print options or

Cancel to restore the default settings. Select **Print** from the File menu. The Print dialog box opens. Specify the printer, number of copies and print range; Click **OK** to print the range you indicated or **Cancel** to cancel the print job. The Print dialog box closes.

9. **Close the document**.

   Select **Close** from the File menu.

10. **Close or minimize Netscape**.

    Close Netscape by selecting **Exit** from the File menu. Minimize Netscape by selecting **Minimize** from the Netscape menu, located underneath the button in the top left corner of the Netscape window.

7.7 On-Line Help

The Help window displays context-sensitive help from any FOS window. Access help by clicking the **Help** button in the window where you need help. The Netscape browser opens to a home page displaying context-sensitive help. To access the overview help page which provides a list of help topics and links to help pages (see Figure 7.7-1), click the home button at the top of the Netscape window from any context sensitive page.

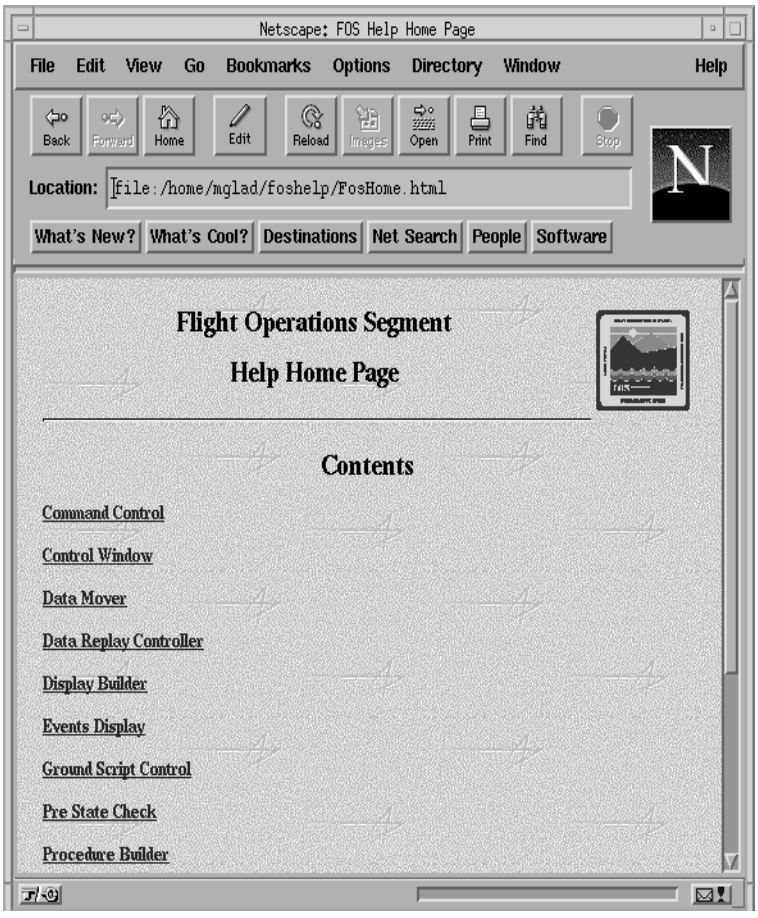


Figure 7.7-1. FOS Overview Help Page

7.8 Snapshots

The FOS uses commercial software (xv) to capture snapshots of windows to a file or send snapshots to a printer.

7.8.1 Take a Snapshot of a Window

1. **Open xv via UNIX**.

   Enter the UNIX command initiating xv in the Control window command line. To enter UNIX commands in the command line, precede the UNIX command with "sh".

   sh xv

   The xv window opens (see Figure 7.8.1-1).

   or

   Open xv via the Control window.

   Click **Tools...** on the Control window or Mini-Control window. The Tool Selection dialog box opens. Select **Snapshot** from the list of tools and click **OK**.

2. **Open the xv controls window**.

   Position the pointer anywhere on the xv window and click the right mouse button to open the xv controls window (see Figure 7.8.1-2).

3. **Snap a window**.

   Click **Grab** and then click the window you want to snap. The snapped window is duplicated on the screen and a message in the message bar on the xv controls window indicates the size of the captured window and indicates that all desired colors were captured.

4. **Save the snap to a file**.

   Click **Save**. The xv save window opens (see Figure 7.8.1-3). Select the directory where the file should be saved, the file format, and color option. Type a file name in the Save file box and click **OK**.

5. **Open the saved file**.

   Open the file you just saved by clicking **Load**, selecting the directory and file name, and clicking **OK**. The window snap opens.

6. **Print the snap**.

   Enter the UNIX print command in the command line of the Control window.

   sh lpr filename

7. **Close xv**.

   Click **Quit**.

.

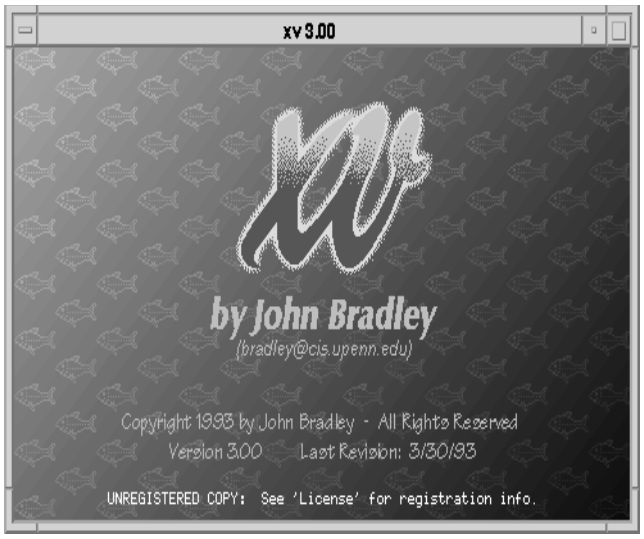


Figure 7.8.1-1. xv Window

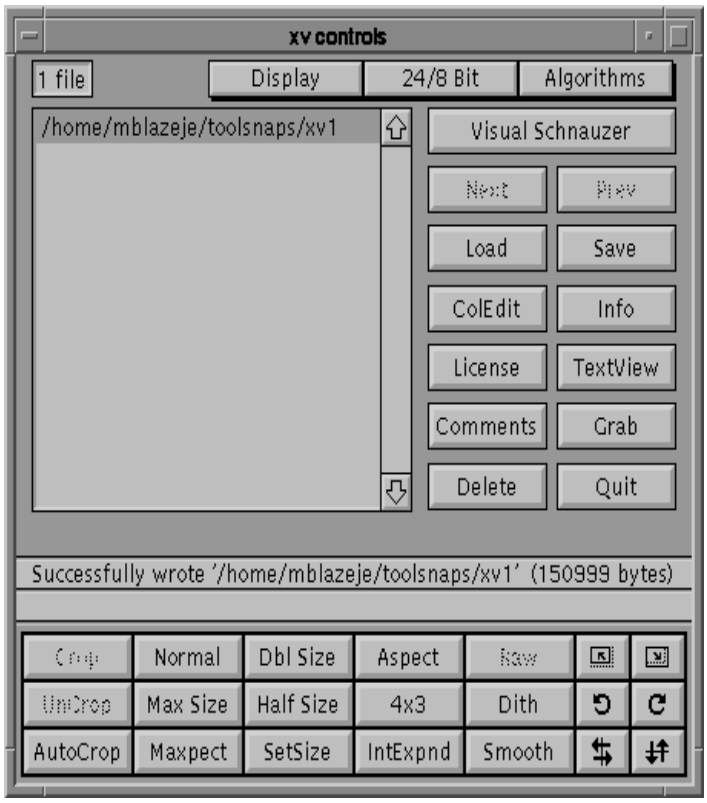


Figure 7.8.1-2. xv Controls Window

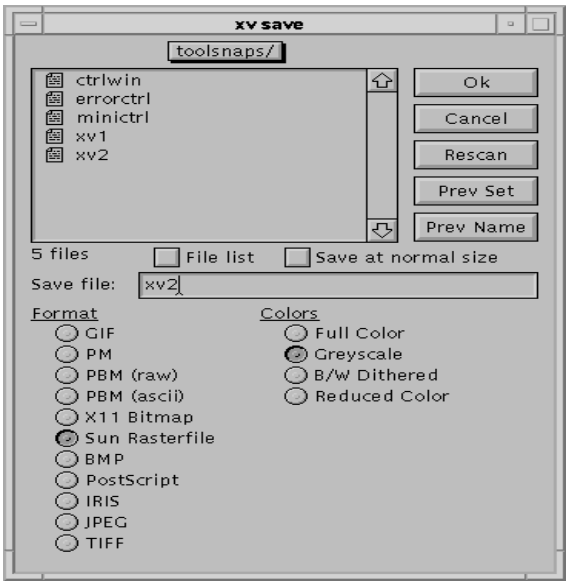


Figure 7.8.1-3. xv Save Window

7.9 Display Builder

The Display Builder tool enables you to create telemetry display screens called “dynamic pages.” A dynamic page displays parameters from the logical strings associated with that page. These parameters or mnemonics can be displayed on a dynamic page as tables, graphs, or alphanumeric fields.

7.9.1 Start Display Builder

1. **Open the Display Builder**.

   Click **Tools…** on the Control window or Mini Control window. The Tool Selection dialog box opens; select **Display Builder** from the list of tools and click **OK**.

   The Display Builder Palette, Display Item Format, Data Display Item Data Sources, and Display Builder Console windows open. An empty dynamic page also opens in the Display Builder’s Dynamic Page window (see Figure 7.9.1-1).

   The Display Builder Palette and Display Builder Dynamic Page remain open while the Display Builder Tool is running. To hide the Display Item Format, Display Item Data Sources, or Display Builder Console windows, select the name of the window from the Window menu of the Display Builder Palette window.

7.9.2 Create a New Dynamic Page

When the Display Builder Tool starts, the Display Builder’s Dynamic Page window opens with an empty page for editing. You can discard the page being edited and start over with a blank dynamic page by selecting **New** from the File menu of the Display Builder Palette window see Figure 7.9.2-1). Select **Save** or **SaveAs** from the File menu of the Display Builder Palette window to save the file. Note that saving the file does not make the page accessible via the Control window. Refer to Section 7.9.11 for instructions on making a dynamic page accessible via the Control window.

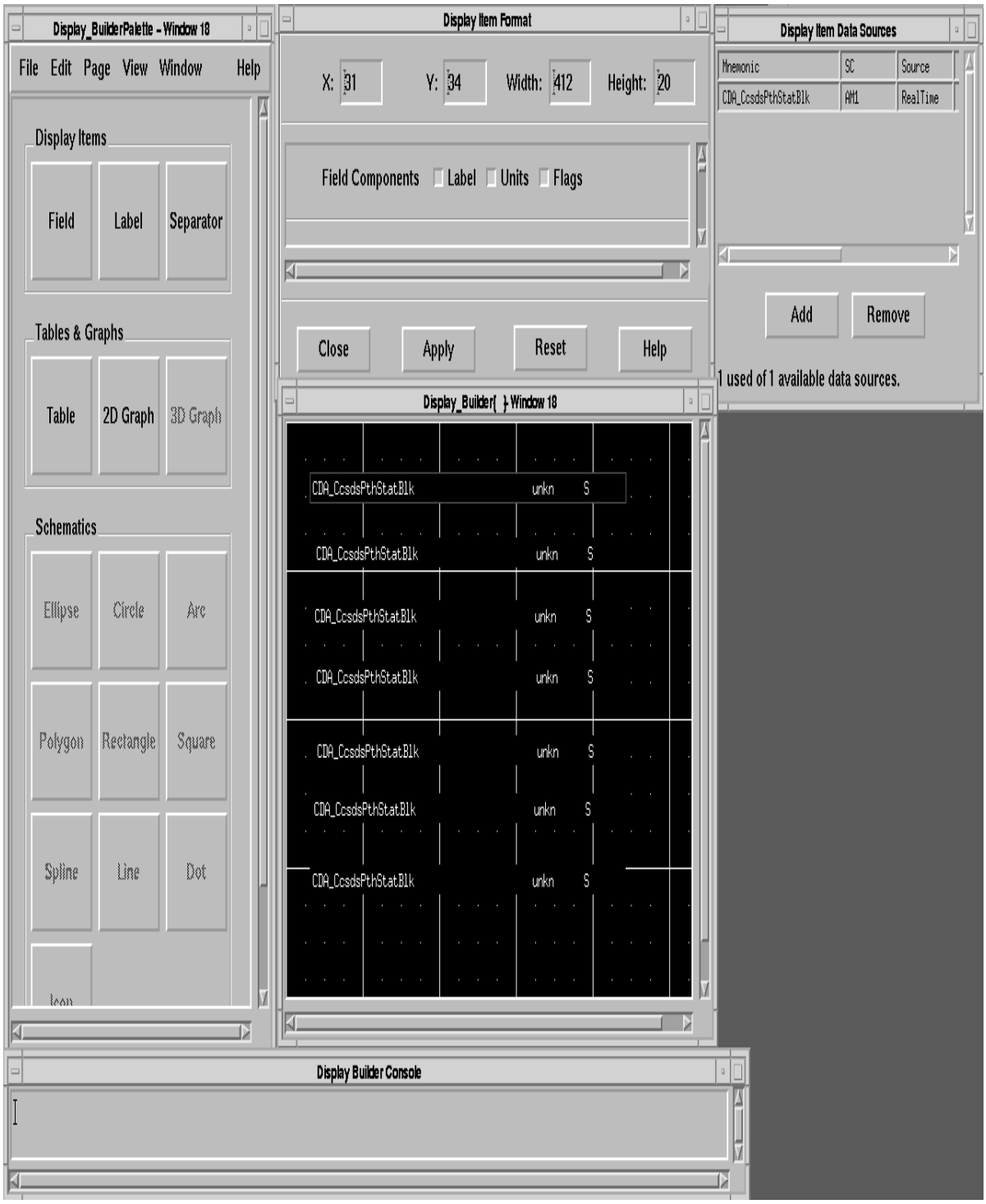


Figure 7.9.1-1. Display Builder Windows (Palette, Format, Data Sources, Dynamic Page, and Console

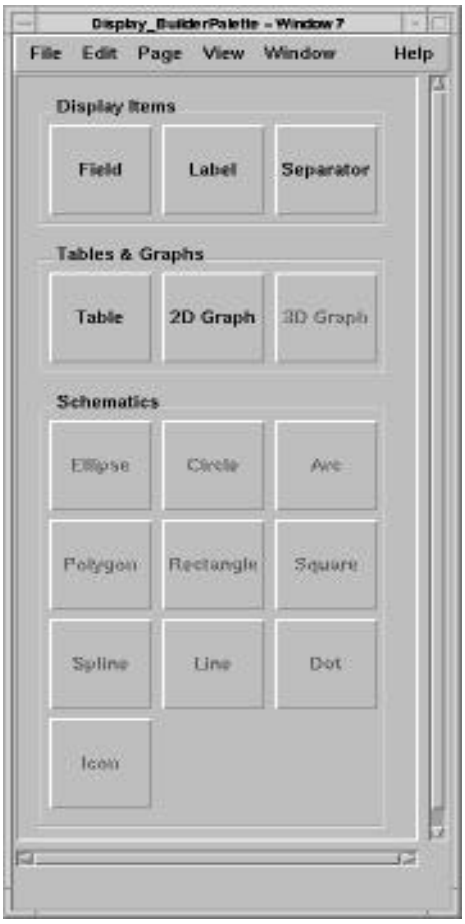


Figure 7.9.2-1. Display Builder Palette Window

7.9.3 Open an Existing Dynamic Page

1. **Select Open from the File menu of the Display Builder Palette window**.

   The Open dialog box opens (see Figure 7.9.3-1).

2. **Filter on dynamic pages in your local pages directory**.

   Click **Local**.

   The dynamic pages in the pages subdirectory of your home directory are listed in the Files list box.

   or

   To filter on global system pages.

   Click **System**.

   The system dynamic pages are listed under **Files.**

   or

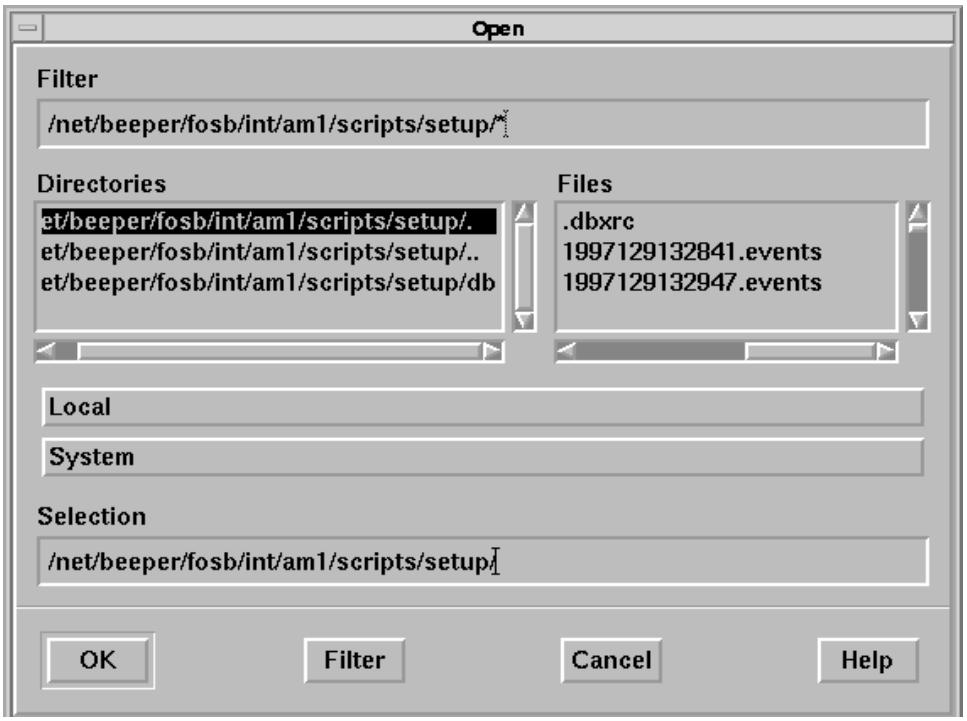


Figure 7.9.3-1. Open Dialog Box

Enter your own filter criteria.

To define filter criteria, such as a path or file extension, type the criteria in the **Filter** text box.

3. **Select the dynamic page file to open from the Files list box.**

   Highlight the file name and click **OK**.

   The dynamic page file opens and the Open dialog box closes.

4. **Save the file**.

   Select **Save** or **SaveAs** from the File menu of the Display Builder Palette window. Note that saving the file does not make the page accessible via the Control window. Refer to Section 7.9.11 for instructions on making a dynamic page accessible via the Control window.

5. **Monitor the status of file operations**.

   The Display Builder Console window (see Figure 7.9.3-2) provides status on file operations.

.

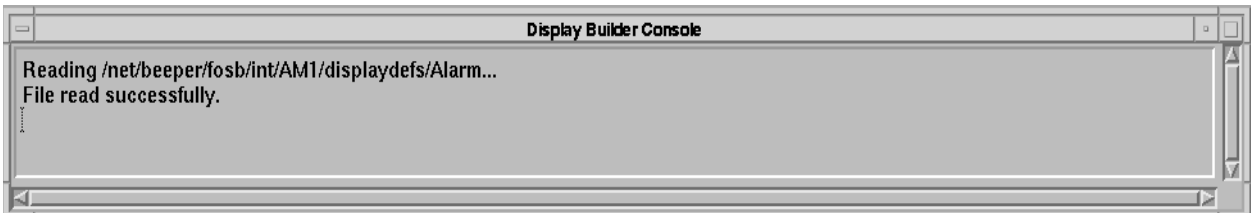


Figure 7.9.3-2. Display Builder Console Window

7.9.4 Associate a Logical String with a Dynamic Page

One or more logical strings must be associated with each dynamic page. The dynamic page displays parameters you select from the available parameters for logical strings associated with the page.

1. **Open the Dynamic Page Logical String Management window (see Figure 7.9.4-1)**.

   Select **Logical String Management** from the Page menu of the Display Builder Palette window.

2. **Select the Source and Mode**.

   Specify the **Source** (**Operational**, **Test** or **Training**) and **Mode** (**Real-Time**, **Replay**, and **Simulation**) by selecting the appropriate options from the pull-down menus. Restore Source and Mode to their default settings by selecting ***** under the **Source** and **Mode** pull-down menus.

   The logical strings with attributes matching the source and mode selected appear in the list box. Repeat step 2 to include additional logical strings with different Sources and Modes in the list box.

3. **Establish the logical strings to associate with the dynamic page**.

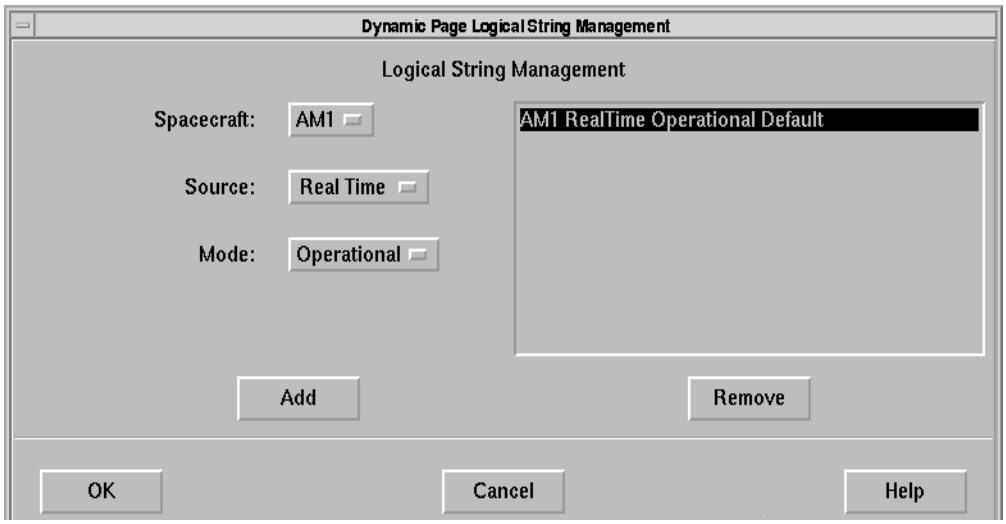


Figure 7.9.4-1. Dynamic Page Logical String Management Window

Select the logical strings from which parameters will be chosen by selecting the strings in the Logical String Management List box and clicking **Add**. To remove a logical string from the list box, highlight the string and click **Remove**.

Once the list box contains the logical strings you want to associate with the dynamic page, click **OK**.

The Display Item Parameter Selector dialog box opens (see Figure 7.9.4-2).

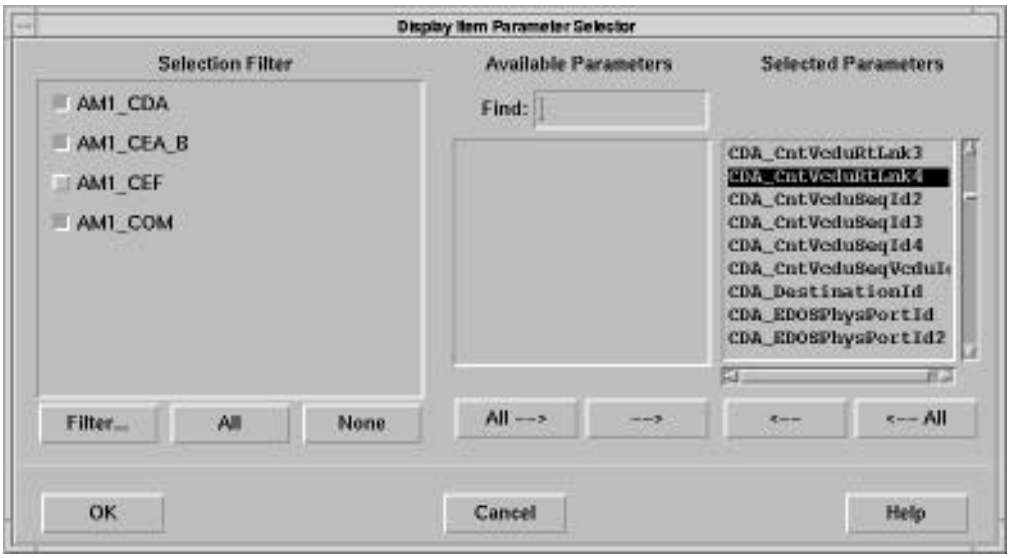


Figure 7.9.4-2. Display Item Parameter Selector Dialog Box

7.9.5 Add a Display Item, Table or Graph to a Dynamic Page

One or more logical strings must be associated with the dynamic page prior to adding a display item, table or graph to a dynamic page. On the Display Builder Palette window, click a Display Item (**Field**, **Label,** or **Separator**), or an item under Tables & Graphs (**Table** or **2D Graph**). Drag the item to the Display Builder Dynamic Page and release the mouse button.

Display items may be repositioned by clicking the item in the dynamic page and moving it with the mouse. Additional formatting options are available on the Display Item Format window. The options available in the Display Item Format window change based on the item selected for editing in the dynamic page (field, label, separator, or graph).

7.9.6 Associate a Parameter with a Display Item on a Dynamic Page

A field, table, or graph displays data from the parameters associated with the display item. A field may be associated with one parameter, a table with up to 50 parameters, and a graph may have up to six parameters plotted along its y-axis against either spacecraft time or another parameter.

1. **Select a field, table, or graph on the dynamic page**.
2. **Click Add on the Dynamic Page Logical String Management window**.

   The Display Item Parameter Selector dialog box opens (see Figure 7.9.6-1).

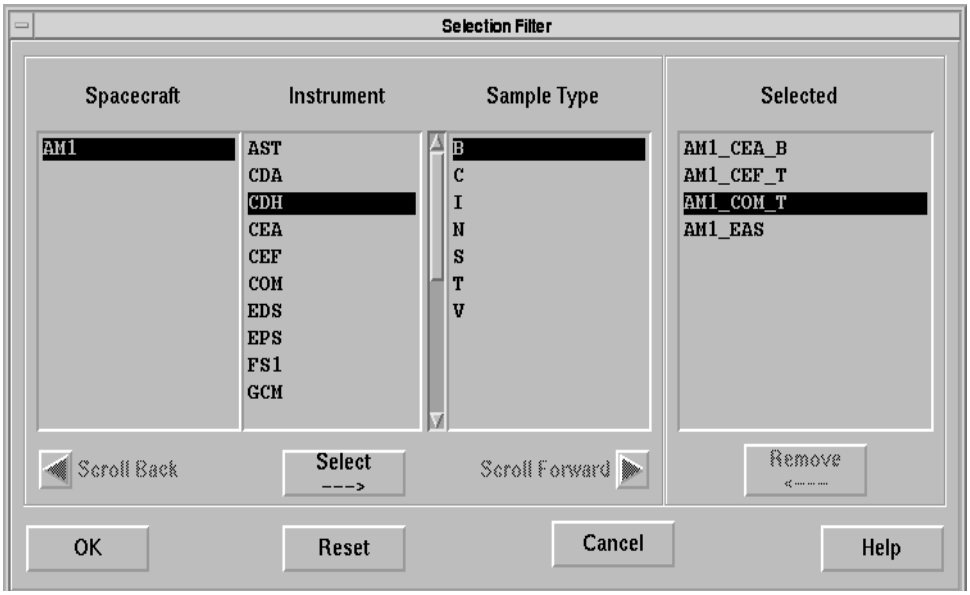


Figure 7.9.6-1. Selection Filter Dialog Box

3. **Select parameters to display**.

   Click one or more parameter in the list box of available parameters on the Display Item Parameter Selector dialog box. Click → or double click the parameter. Once the **Selected Parameters** list box includes the parameters you want to associate with the display item, click **OK**.

   The parameter(s) in the Selected Parameters list box are associated with the field, table, or graph. If more parameters are selected than are allowed to be associated with a field, table, or graph, the first parameters up to the total number of parameters allowed will be associated with the display item.

   or

   Filter parameters.

   Click **Filter** on the Display Item Parameter Selector dialog box.

   The Selection Filter dialog box open.

   On the Selection Filter, select the **Spacecraft** and **Instrument** to filter or double click the **Spacecraft** and **Instrument** name. Select the parameter categories to be associated with the display item from the **Selected** list box. To remove a parameter category from the list of selected parameters, click the parameter in the **Selected** list box and click the **Remove** button. Once the **Selected** list box includes the parameters you want to associate with the display item, click **OK**.

   If more parameters are selected than are allowed to be associated with a field, table, or graph, the first parameters up to the total number of parameters allowed will be associated with the display item.

Figure 7.9.6-2. Display Item Data Sources Window

4. **View the parameters associated with a display item**.

   Select the field, table, or graph. The parameters associated with the selected display item are listed in the Display Item Data Sources window (see Figure 7.9.6-2).

7.9.7 Edit Display Items on a Dynamic Page

To edit labels:

1. **Select the label to be edited on the dynamic page**.

   Click **Reset**.

   The options available in the Display Item Format window (see Figure 7.9.7-1) change based on selection of a label to be edited in the dynamic page.

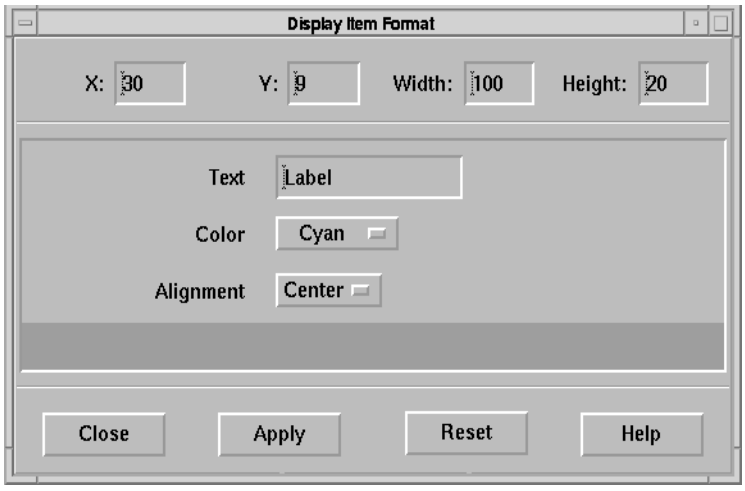


Figure 7.9.7-1. Display Item Format Window

2. **Type the label and select formatting options**.

   Type the label and select its alignment, position and color. Click **Apply**.

3. **Revert the display item unedited state**.

   Click **Reset**.

4. **Hide the Display Item Format window**.

   Click **Close**.

   The formatting changes made prior to selecting close will not be applied to the display item. These changes remain in the Display Item Format window and can be applied when the window is reopened by selecting **Apply**.

To edit separators:

1. **Select the separator (a horizontal or vertical line) to be edited on the dynamic page**.

   The options available in the Display Item Format window change to formatting options for a separator as displayed in (see Figure 7.9.7-2.)

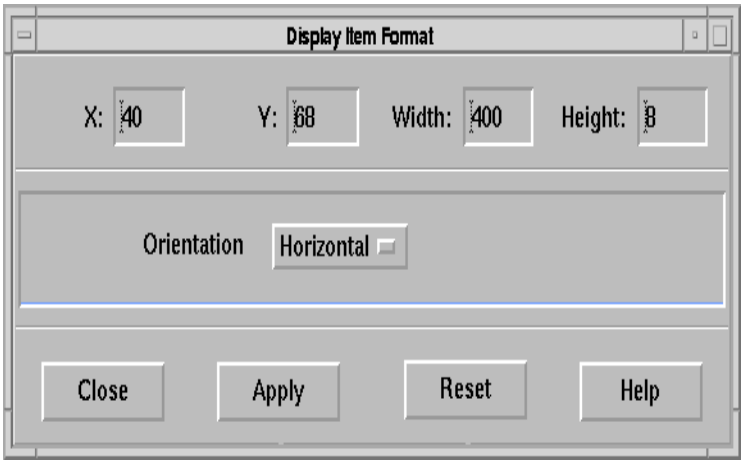


Figure 7.9.7-2. Display Item Format Window

2. **Select separator formatting options**.

   Select the orientation, height, width and position of the separator. Click **Apply**.

3. **Revert the display item to its unedited state**.

   Click **Reset**.

4. **Hide the Display Item Format window**.

   Click **Close**.

   The formatting changes made prior to selecting close will not be applied to the display item. These changes remain in the Display Item Format window and can be applied when the window is reopened by selecting **Apply**.

7.9.8 Edit a Field

A field displays data from one parameter.

1. **Select the field to be edited on the dynamic page**.

   The options available in the Display Item Format window change to reflect the selection of a field (see Figure 7.9.8-1).

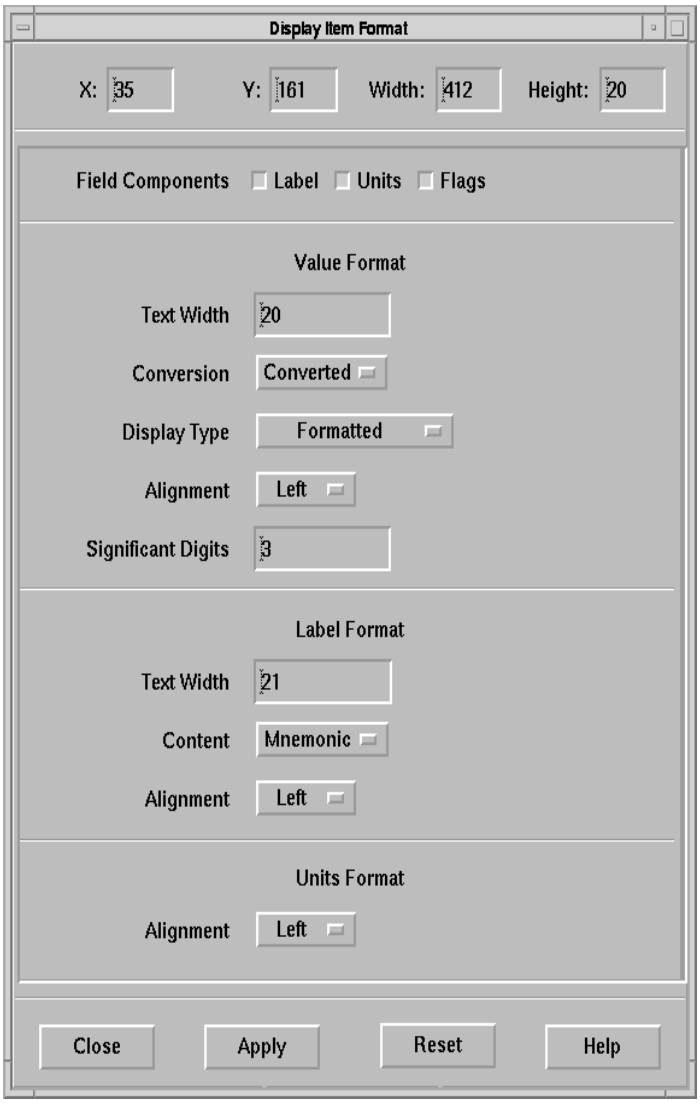


Figure 7.9.8-1. Display Item Format Window

2. **Select the Field Components to display and format fields**.

   Click the box next to the field components (**Label, Units, Flag**) to be disdplayed. To format a lable, select **Mnemonic** to display the mnemonic name in the label; select the **Descriptor** to display the long descriptor for the mnemonic from the PDB. Select the formatting options desired and click **Apply**.

3. **Revert the display item to its unedited state**.

   Click **Reset**.

4. **Hide the Display Item Format window**.

   Click **Close**.

   The formatting changes made prior to selecting close will not be applied to the display item. These changes remain in the Display Item Format window and can be applied when the window is reopened by selecting **Apply**.

7.9.9 Edit a Table

Figure 7.9.9-1 is an example of a dynamic page containing a table and simulated data.

1. **Select the table to be edited on the dynamic page**.

   The options available in the Display Item Format window change to reflect the selection of a table in the dynamic page (see Figure 7.9.9-2).

2. **Type a title for the table in the Title text box**.

   To display a column name as a mnemonic, select **Mnemonic**. To display the longer, more descriptive name from the PDB as the column name, select **Descriptor**. Click **Apply**.

3. **Revert the display item to its unedited state**.

   Click Reset.

4. **Hide the Display Item Format window**.

   Click **Close**.

   The formatting changes made prior to selecting close will not be applied to the display item. These changes remain in the Display Item Format window and can be applied when the window is reopened by selecting **Apply**.

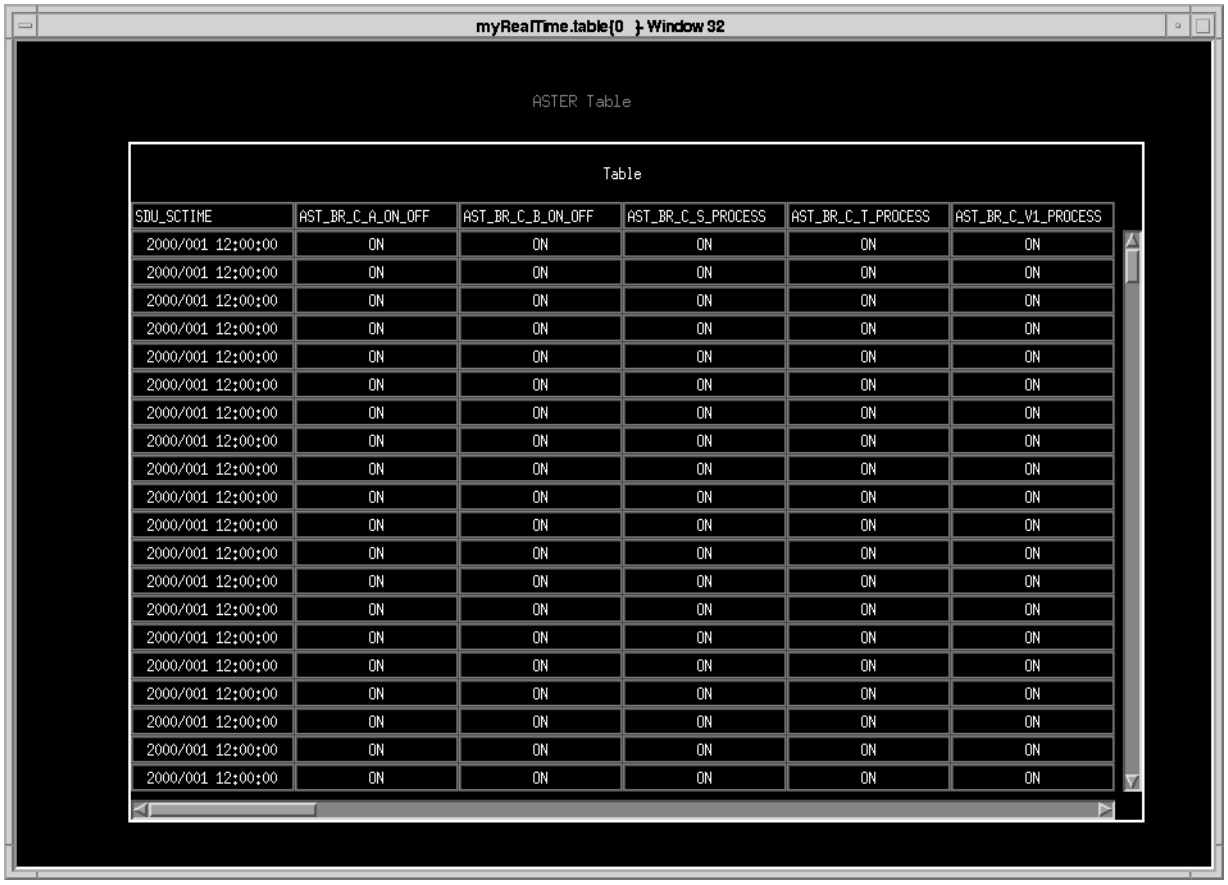


Figure 7.9.9-1. Dynamic Page Containing a Table

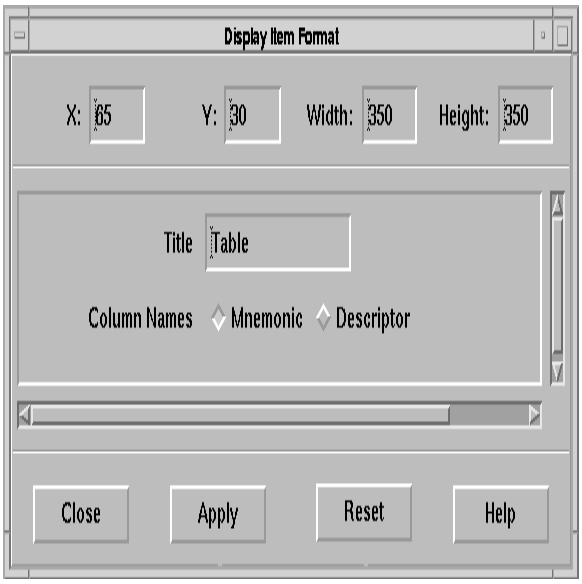


Figure 7.9.9-2. Display Item Format Window

7.9.10 Edit a Graph

To edit a graph's axes:

1. **Select the graph to be edited on the dynamic page**.

   Select the elements to show (Legend, Grid, Axes, Footer) on the graph.

2. **Select Axes from the Edit pull-down menu on the Display Item Format window**.

   The options available in the Display Item Format window (see Figure 7.9.10-1) change to reflect the selection of axes from the Edit pull-down menu.

   Type the axes labels, x-axis display interval (frequency of data refreshment), minimum and maximum values to display, and axes granularity (line thickness). One unit of time is 1.00000 day (24 hours). Click **Apply**.

3. **Revert the display item to its unedited state**.

   Click **Reset**.

4. **Hide the Display Item Format window**.

   Click **Close**.

   The formatting changes made prior to selecting close will not be applied to the display item. These changes remain in the Display Item Format window and can be applied when the window is reopened by selecting **Apply**.

To edit a graph legend:

1. **Select the graph to be edited on the dynamic page**.

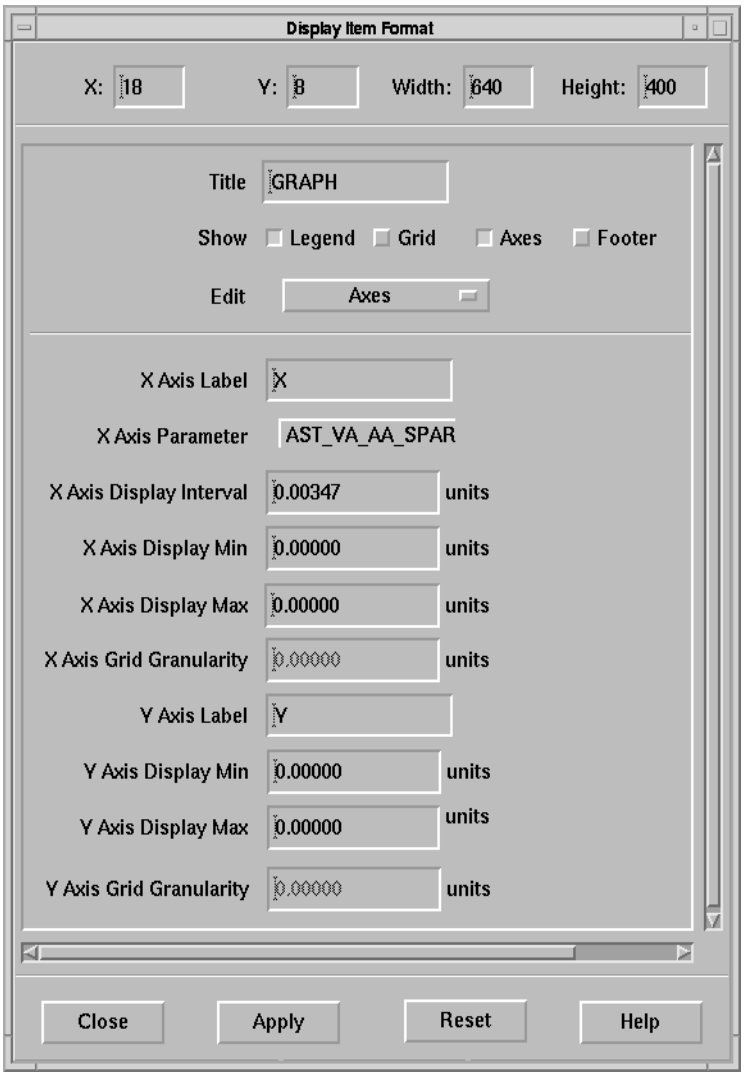


Figure 7.9.10-1. Display Item Format Window

2. **Select Legend from the Edit pull-down menu on the Display Item Format window**.

   The options available in the Display Item Format window (see Figure 7.9.10-2) update to reflect legend formatting options.

   Select the position and border for the legend. Click **Apply**.

3. **Revert the display item to its unedited state**.

   Click **Reset**.

4. **Hide the Display Item Format window**.

   Click **Close**.

   The formatting changes made prior to selecting close will not be applied to the display item. These changes remain in the Display Item Format window and can be applied when the window is reopened by selecting **Apply**.

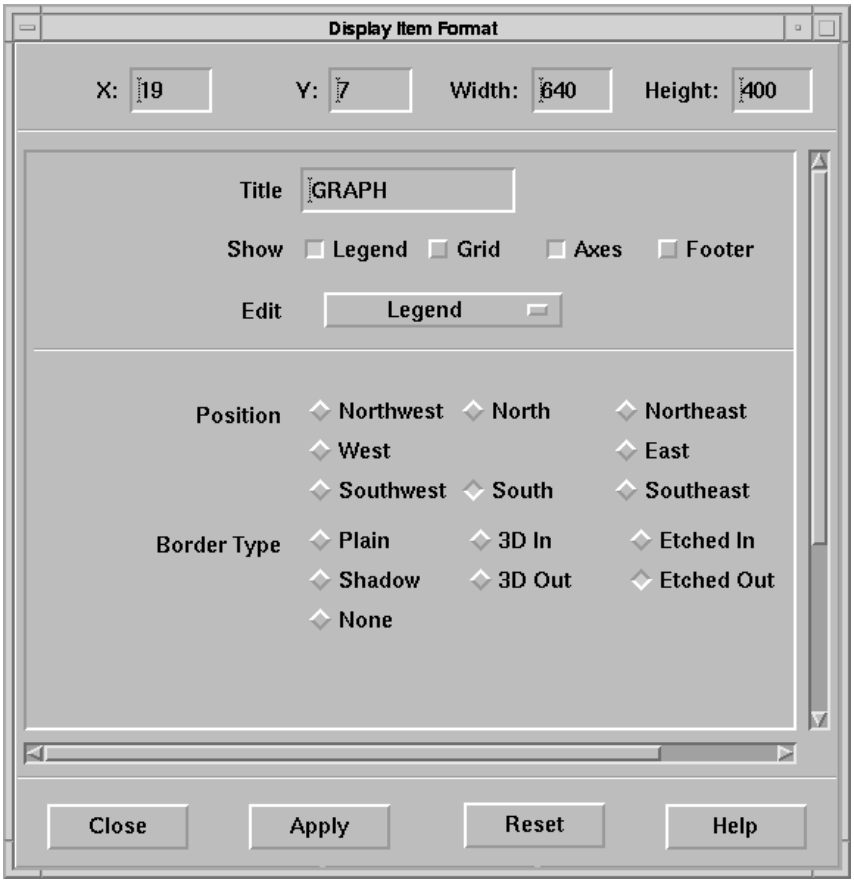


Figure 7.9.10-2. Display Item Format Window

To edit graph color and line style:

1. **Select the graph to be edited on the dynamic page**.
2. **Select Color and Line Style from the Edit pull-down menu on the Display Item Format window**.

   The Display Item Format window updates (see Figure 7.9.10-3) to reflect color and line formatting options.

   Select the color, line style and point formatting options for the line to be graphed. Select the grid line style from the Grid Line style pull-down menu. Click **Apply**.
3. **Revert the display item to its unedited state**.

   Click **Reset**.
4. **Hide the Display Item Format window**.

   Click **Close**.

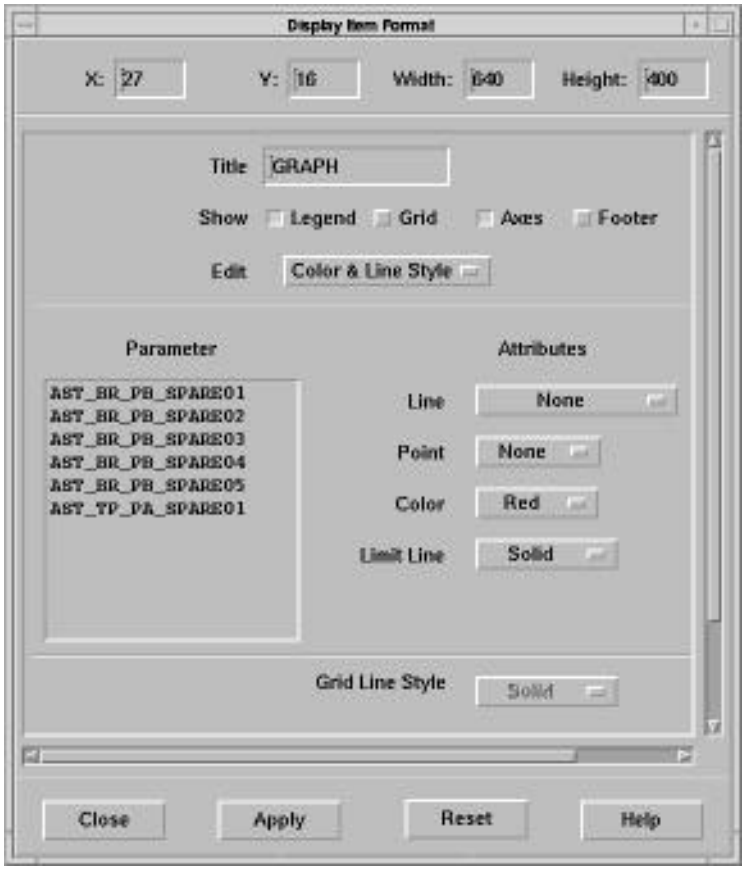


Figure 7.9.10-3. Display Item Format Window

The formatting changes made prior to selecting close will not be applied to the display item. These changes remain in the Display Item Format window and can be applied when the window is reopened by selecting **Apply**.

To display Minimum, Maximum and Current mnemonic values:

To display the minimum, maximum, and current values for a graphed mnemonic, click on the line representing the mnemonic. The values are displayed at the bottom of the graph.

To edit a graph footer:

1. **Select the graph to be eeited on the dynamic page**.
2. **Select Footer from the Edit pull-down on the Display Item Format window**.

   The Display Item Format window updates to reflect footer formatting options as displayed in Figure 7.9.10-4.

   Type the footer and select the footer border style. Click **Apply**.
3. **Revert the display item to its unedited state**.

   Click **Reset**.

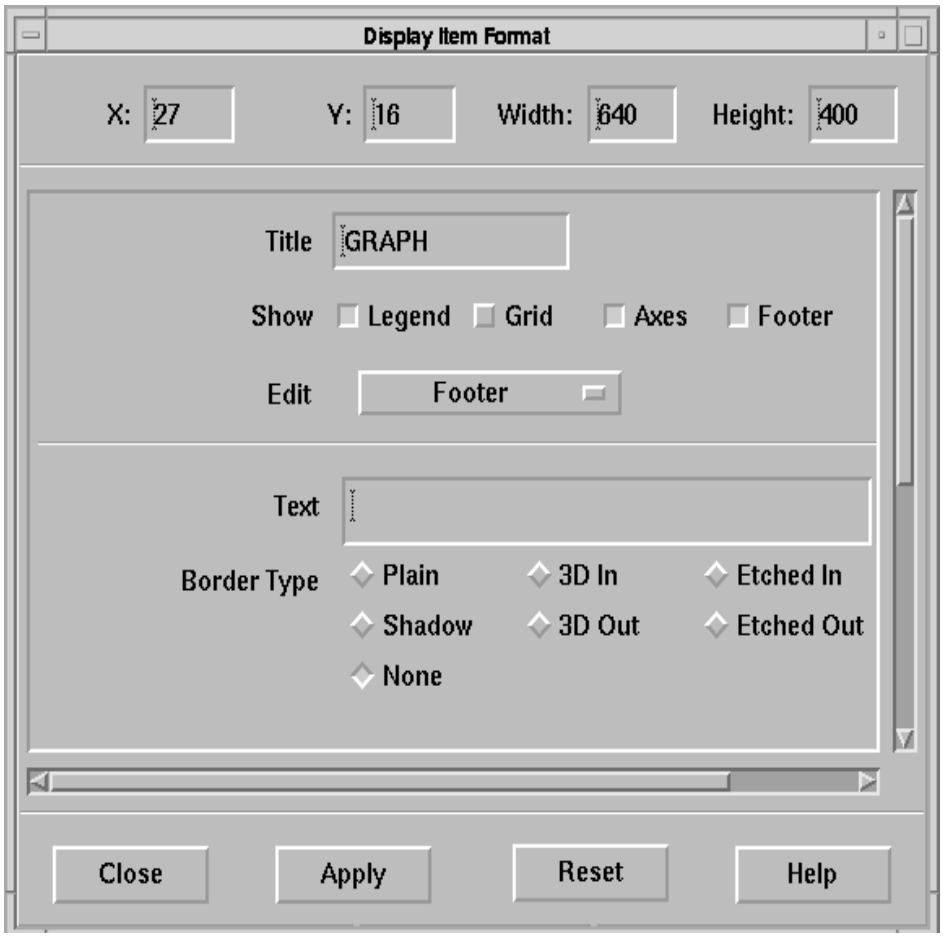


Figure 7.9.10-4. Display Item Format Window

4. **Hide the Display Item Format window**.

   Click **Close**.

   The formatting changes made prior to selecting close will not be applied to the display item. These changes remain in the Display Item Format window and can be applied when the window is reopened by selecting **Apply**.

7.9.11 Add a Dynamic Page to the List of Pages under the Control Window

Saving a dynamic page does not make the file accessible via the Control window where you enter ECL directives and connect to a logical string. To enable the page definition file to display telemetry while you are connected to a logical string, you must perform the following actions.

1. **Open the file and select Build to Local or Build to CM**.

   Open the file you wish to make accessible to the Control window. If you wish to store the page definition file with your locally defined page definition files, select **Build to Local** under the File menu of the Display Builder Palette window. If you wish to store the file in the shared directory containing the global page definitions, select **Build to CM**.

2. **Enable the dynamic page to be persistent in rooms where the Display Builder is not open**.

   Once the page definition has been Built to Local or Built to CM, the dynamic page can be present in rooms other than those containing the Display Builder tool. Select **Persistent** under the Pages menu of the Display Builder Palette window.

   Once you select **Build to Local** or **Build to CM**, the page is accessible via the Control window. Open the Dynamic Page dialog box by clicking **Tlm Wins…** and select a page to open.

7.9.12 Exit the Display Builder

Select **Quit** under the File menu of the Display Builder Palette window.

7.10 Monitor Telemetry on a Dynamic Page

After creating a dynamic page and making it accessible via the Control window as described in Section 7.9, you can monitor telemetry by connecting to a real-time logical string and opening a dynamic page. In addition, you can switch the data source being displayed from one logical string to another string and create a temporary dynamic page.

The FOS provides two tools for controlling telemetry displays in an active dynamic page, the Data Source Switcher and Quick Analysis, which are described here in detail. As long as the page is persistent, the Display Builder tool need not be open. Access a dynamic page telemetry menu by opening an active dynamic page, positioning the mouse pointer on the active page, and clicking the right mouse button. The dynamic page telemetry menu and associated telemetry monitoring functions are only accessible via an active dynamic page. The dynamic page telemetry menu includes the following options:

a. **Pause**/**Resume**: **Pause** suspends the update of parameters on a dynamic page. Once **Pause** is selected, the menu option changes to **Resume,** continuing the update of parameters on the page.

b. **Data Source Selector**. Opens the Data Source Switcher window displaying logical string information and enabling you to switch between strings.

c. **Quick Analysis**. Opens the Quick Analysis window enabling you to build a temporary page to display telemetry mnemonics.

d. **Converted**. The value of a parameter's mnemonic in a converted format designed to be comprehensible without interpretation.(may be a string or decimal).

e. **Decoded**. The parameter's mnemonic displayed as a floating point number.

f. **Raw**: The parameter's mnemonic displayed in hexadecimal format.

7.10.1 Data Source Switcher

The Data Source Switcher window displays all logical strings you are connected to, as well as all strings available for connection. It also enables you to switch the strings being displayed. Although you can switch between strings being displayed, you may not change the number of strings being displayed on the string while the page is active. Prior to switching to a string, connect to the string as described in Section 9. You must be connected to a string prior to switching to that

string. Changes in the strings being displayed on the page are not saved and consequently do not affect the page file.

To switch between logical strings:

1. **Open a dynamic page**.

   Click **TlmWins…** on the Control window to open the Dynamic Page dialog box. Select a dynamic page from the list and click **OK**.

2. **Open the Data Source Switcher window (see Figure 7.10.1-1)**.

   Position the pointer on the dynamic page, click the right mouse button and select **Data Source Switcher** from the menu.

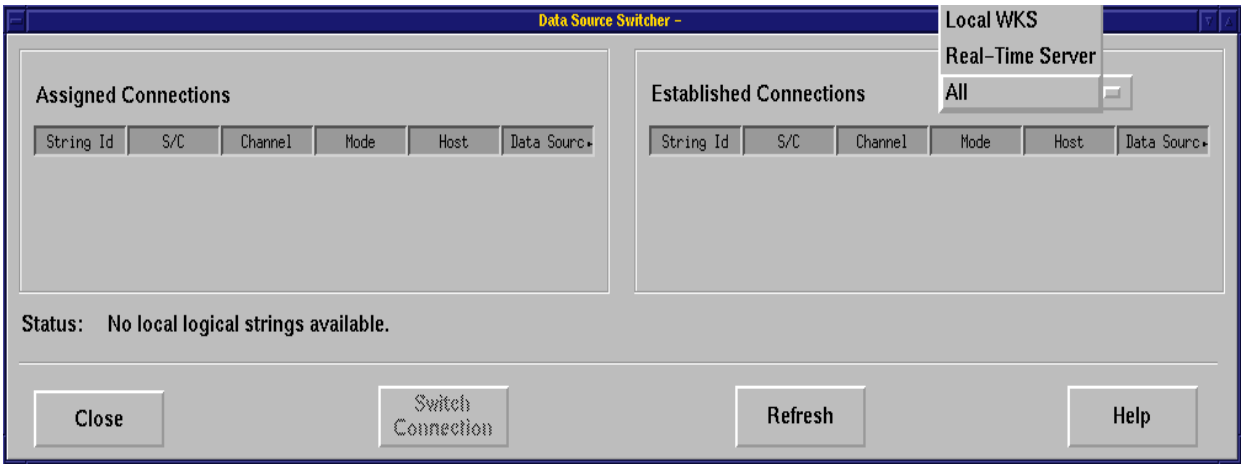


Figure 7.10.1-1. Data Source Switcher

   All logical strings you are connected to are displayed in the window's Assigned Connections table. All logical strings available for connection, including strings you are connected to, are listed in the Established Connections table. Choose one of the three options from the pull-down menu above the Established Connections table to display strings with processes running on your userstation (**Local WKS**), strings with processes running on the Real-Time server (**Real-Time Server**), or all logical strings (**All**).

3. **Connect to a logical string**.

   If you are not connected to the string you wish to switch to, connect to the string as described in Section 9.6. After connecting to the string, click **Refresh** to update the Established Connections table to include the string.

4. **Switch between logical strings**.

   Select a string in the Assigned Connections table and a string in the Established Connections table and click **Switch Connection**.

5. **Close the Data Source Switcher**.

   Click **Close**.

7.10.2 Quick Analysis

The Quick Analysis window enables you to create a temporary telemetry display page for analysis purposes. Parameters displayed on the page may be selected from the parameters displayed on the current, active dynamic page or the parameters from the string(s) associated with the dynamic page which are not currently displayed. Once the parameters for the temporary page are selected, they may be displayed in one of four formats:

a. **Telemetry Attributes**. Display parameter attributes.

b. **Alphanumeric**. Display parameters in field rows.

c. **Table**. Display parameters in a table.

d. **Graph**. Display parameters in a graph.

To create a temporary Telemetry Display page on the fly:

1. **Open a dynamic page**.

   Click **TlmWins…** on the Control window to open the Dynamic Page dialog box. Select a dynamic page from the list and click **OK**.

2. **Open the Quick Analysis window (see Figure 7.10.2-1)**.

   Position the pointer on the dynamic page, click the right mouse button, and select **Quick Analysis** from the menu. If Quick Analysis is accessed from a dynamic page, only the parameters in the open dynamic page will be available for the temporary dynamic page. These parameters will be listed in the **Available** list box on the Quick Analysis window.

   or

   Click **Tools...** at the bottom of the Control window. The Tools dialog box opens. Select **Quick Analysis** from the list of tools and click **OK**. If Quick Analysis is accessed from the Control window, the parameters from strings you are connected to may be displayed on the temporary page.

3. **Select parameters to display on the temporary page**.

   a. If you accessed Quick Analysis from an open, active dynamic page:

      Parameters displayed on the dynamic page are listed in the **Available** list box. Add additional parameters to the **Selected** list box by highlighting them in the **Available** list box and moving them to the list of selected parameters as described in step 4.

   b. If you accessed Quick Analysis from the Control window:

      Filter parameters by spacecraft subsystem.

      Click **Filter…** to open the Selection Filter dialog box. Select the spacecraft and instrument(s) to filter by from the **Spacecraft** and **Instrument** list boxes and click **Select→**. Once the **Selected** list box reflects the spacecraft and instruments you wish to filter by, click **OK** to close the Selection Filter dialog box. The parameters in the **Available** list box reflect parameters for the subsystems you selected.

      or

.

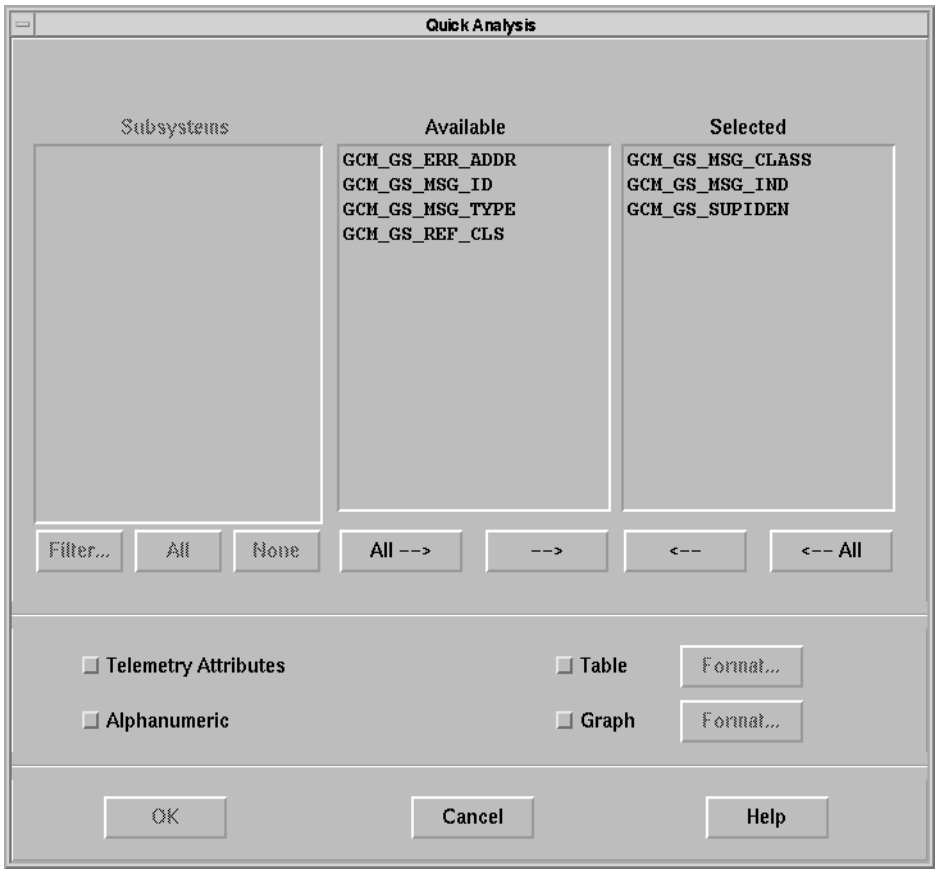


Figure 7.10.2-1. Quick Analysis Window

Select spacecraft subsystem(s) from which you wish to select parameters: Click the check box next to the pertinent subsystem(s) to add parameters for those subsystem(s) to the **Available** list box.

4. **Add parameters to the Selected list box**.

   Select parameter(s) in the **Available** list box and click → . To copy all available parameters to the **Selected** list box, click **All** → . To remove parameters from the **Selected** list box, select the parameter(s) to be removed and click ← . Remove all parameters by clicking **All** ← .

5. **Select the format for the temporary display page**.

   Once the **Selected** list box includes the parameters to be displayed on the temporary telemetry display page, select one of the four display options: **Telemetry Attributes**, **Alphanumeric**, **Table,** or **Graph**. If the **Telemetry Attributes** or **Alphanumeric** format option is selected, proceed to step 7.

6. **Format the table**.

   If the **Table** display option is slected, open the Table Format dialog box (see Figure 7.10.2.-2) by clicking **Format…**.

   a. Enter a table title and select mnemonic or descriptive table names.

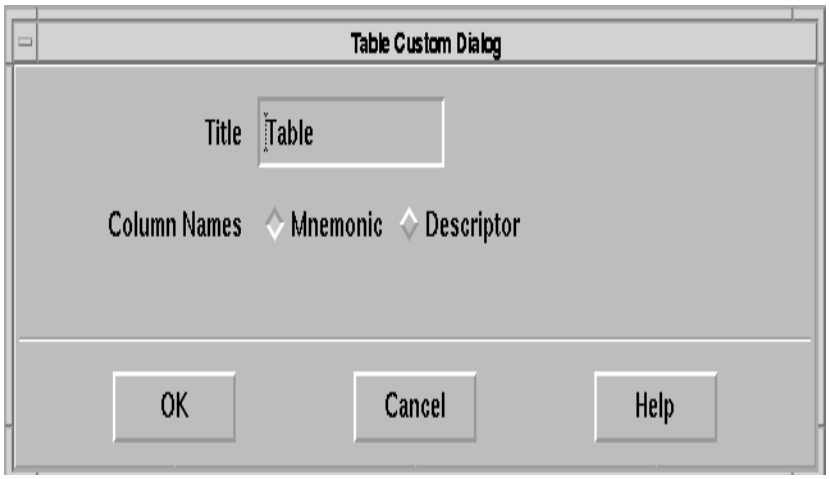
7. **Format the graph**.

   If the **Graph** display option is selected, open the Graph Format dialog box (see Figure 7.10.2-3) by clicking **Format…**.

   a. Enter a graph title and select graph formatting options.

8. **Monitor telemetry via the temporary page**.

   Click **OK**.



7.10.2-2. Table Format Dialog Box

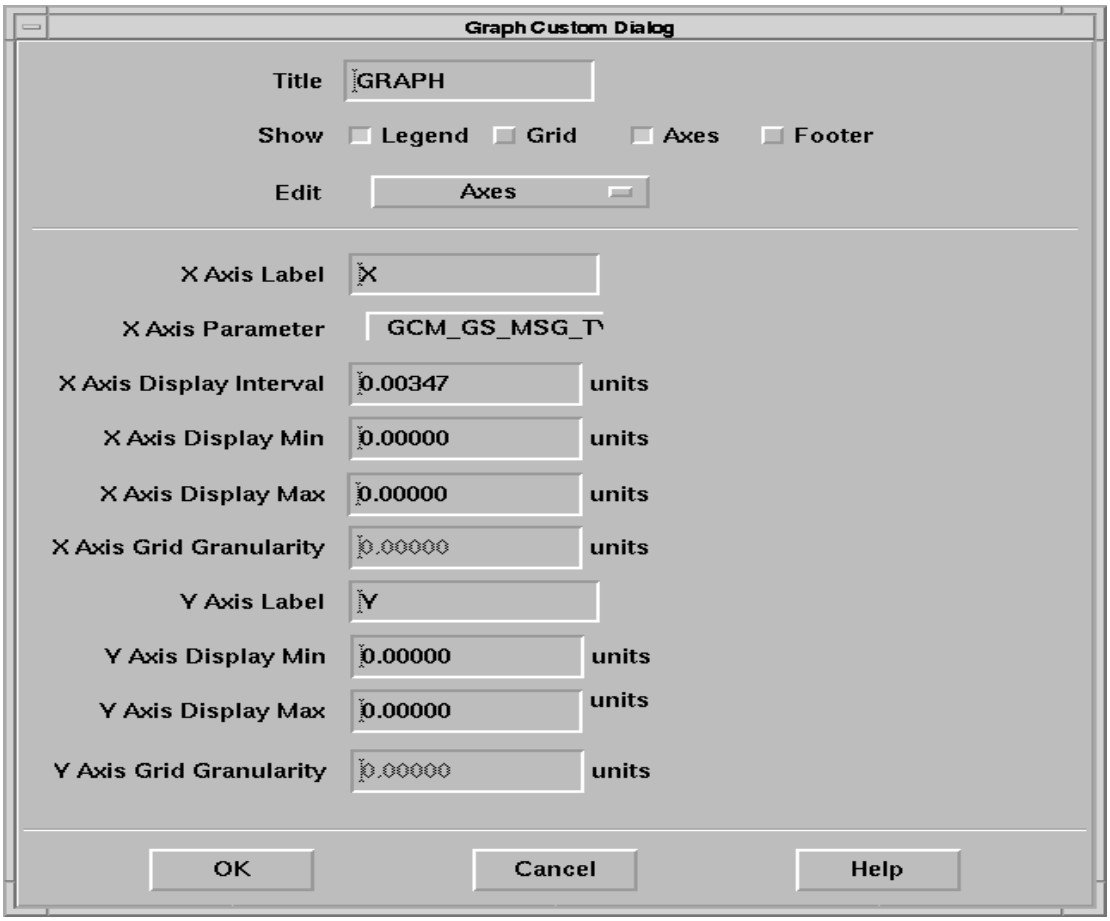
7.11 Room Builder

The Room Builder tool enables you to create or modify room definitions. A room definition is a group of one or more windows, their size, position on the screen, and state (default or tiled) all are saved under a room name. The windows that comprise a room definition are called pages and may be tools or dynamic pages. The Control window is persistent in every room. Room definitions may be temporary - saved for the current session, or permanent - saved for future sessions.

7.11.1 Define a New Room

1. **Select the Pages to Comprise the Room**.

   Open the tools and dynamic pages to be included in the room definition. To open a tool, select it from the Tools menu of the Control window. To open a dynamic page, click **TlmWins…** on the Control window to open the Dynamic Page dialog box. Select a dynamic page from the list and click **OK**.



7.10.2-3. Graph Format Dialog Box

2. **Position and Size Pages in the Room**.

   Move and resize the windows on the screen into the desired room configuration with the mouse or by entering the PAGE directive followed by the appropriate subdirective in the Control window's command line. The PAGE directive includes subdirectives for opening and manipulating a dynamic page. In addition, the frequency with which data displayed on the dynamic page is updated when you are attached to a logical string can be set via the PAGE directive. Refer to Appendix A for a complete list of ECL directives and their syntax.

3. **Establish the State of each Page in the Room**.

   Iconify or restore windows into the desired room configuration. To iconify a window, click the top left corner of the window with the left mouse button and select **Minimize** from the Window menu. To restore an icon, click on the icon with the left mouse button and select **Restore** from the Window menu. Alternatively, to iconify or restore a window enter the PAGE directive followed by the appropriate subdirective in the Control window command line.

4. **Open the Room Builder window (see Figure 7.11.1-1)**.

   Click **Tools...** at the bottom of the Control window. The Tools dialog box opens. Select **Room Builder** from the list of tools and click **OK**.

5. **Enter a Name for the Room Definition**.

   Enter a name for the room in the Name text box of the Room Builder window.

6. **Save the Room Definition**.

   To save the room definition for the current session only, click **Temporary**. To save the room definition for future sessions, click **Permanent**.

7. **Establish the Current Configuration of the Room as Tiled or Untiled**.

   Each room definition may have two settings, default and tiled. Although these two settings are categorized as default and tiled, the two states may include windows in any setting - tiled or untiled.

   To establish the current configuration of the room as the default setting, click **Default**.

   If desired, alter the room's configuration to reflect the configuration you wish to delineate as the tiled layout and click **Tiled**.

   or

   To establish the current configuration of the room as the tiled setting, click **Tiled**.

   If desired, alter the room's configuration to reflect the configuration you wish to delineate as the default layout and click **Default**.

8. **Close the Room Builder tool**.

   Click **OK**.

   The Room Builder window closes. The newly defined room is listed under the **Rooms…** button on the Control window.

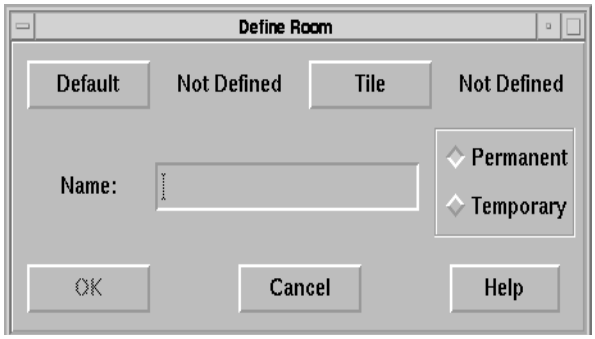


Figure 7.11.1-1. Room Builder Window

7.11.2 Modify an Existing Room

1. **Enter the room to be modified**.

   Select the name of the room under the **Rooms…** button on the Control window or enter the ROOM directive in the Control window's command line.

2. **Update the room's configuration**.

   Add, delete, reposition, resize, or iconify windows as described in steps 1 through 3 of Section 7.11.1.

3 **Open the Room Builder window**.

   Click **Tools...** at the bottom of the Control window. The Tools dialog box opens. Select **Room Builder** from the list of tools and click **OK**.

4. **Enter the Name of the Room Definition**.

   Enter the room's name in the Name text box of the Room Builder window.

5. **Save the Room Definition**.

   To save the room definition for the current session only, click **Temporary**. To save the room definition for future sessions, click **Permanent**.

6. **Establish the Current Configuration of the Room as Tiled or Untiled**.

   Each room definition may have two settings, default and tiled. Although these two settings are categorized as default and tiled, the two states may include windows in any setting - tiled or untiled.

   To establish the current configuration of the room as the default setting, click **Default**.

   If desired, alter the room's configuration to reflect the configuration you wish to delineate as the tiled layout and click **Tiled**.

   or

   To establish the current configuration of the room as the tiled setting, click **Tiled**.

   If desired, alter the room's configuration to reflect the configuration you wish to delineate as the default layout and click **Default**.

7. **Close the Room Builder tool**.

   Click **OK**.

   The Room Builder window closes. The existing room has been modified.

7.11.3 Switch Between Rooms

1. **Enter the First Room**.

   Click **Rooms…** to open the Rooms dialog box and select the room from the list or enter the ROOM directive in the Control window command line.

2. **Enter the Second Room**.

   Select the name of a second room under the **Rooms…** button on the Control window or enter the ROOM directive in the Control window command line.

   The first room is not visible. The second room definition is visible on the screen.

3. **Switch Back to the First Room**.

   Click the left arrow button on the Control window.

   The second room you entered is not visible. The first room definition is visible on the screen.

4. **Switch Back to the Second Room**.

   Click the right arrow button on the Control window.

   The first room is not visible. The second room definition is visible on the screen.

7.11.4 Delete an Existing Room

1. **Enter the room to be deleted**.

   Click **Rooms…** and select the name of the room from the Rooms dialog box or enter the ROOM directive in the Control window command line.

2. **Open the Room Builder window**.

   Click the **Tools...** button at the bottom of the Control window. The Tools dialog box opens. Select **Room Builder** from the list of tools and click **OK**.

3. **Delete the open room definition**.

   Click **Delete** or enter the ROOM DELETE directive in the Control window command line.

7.12 Report Generator

The Report Generator enables you to view or print reports based on data contained in the Project Database (PDB). There are two categories of reports: (1) system-defined, subsystem-specific reports automatically generated by the system on a regular basis and, (2) user-defined reports. System-defined reports are referred to as "periodic" reports, while user-defined reports are considered "on demand" reports. Periodic reports may be viewed or printed while on demand reports may be viewed, printed, or generated, by specifying parameters in the report template.

To access the Report Generator tool:

Open the Report Selector window (see Figure 7.12-1) by clicking **Tools...** at the bottom of the Control window. The Tools dialog box opens. Select **Report Generator** from the list of tools and click **OK**. The **Custom...** button is not available as a Release B capability. Post Release B, the **Custom…** button will enable you to create custom report templates and generate custom reports.

7.12.1 Open an Existing Report

To open an existing report, first select a report template. Then specify a time frame during which a report was created based on the template, as described in the following text.

To select the report type, spacecraft and category:

Select **Periodic** to display system-defined report templates in the list of Available Reports or **On Demand** to display user-defined report templates. Select a spacecraft and report category - **All**, **ANA** (Analysis), **CMS** (Command Management System), or **PAS** (Planning and Scheduling). Click **Help** to launch Netscape to a context-sensitive FOS help page.

To select a system-defined report template:

1. Select a system defined (periodic) report template.

Figure 7.12-1. Report Selector Window

Click **Periodic**, select a report template from the list of available reports and click **OK**. The Report Selector window closes and the Periodic Report Selector window opens (see Figure 7.12.1-1).

or

Select a system defined (periodic) report template and leave the Report Selector window open.

Click **Periodic**, select a report template from the list of available reports and click **Apply**. The Periodic Report Selector window opens (see Figure 7.12.1-1). The Report Selector window remains open in the background.

To select a user defined report template:

1. Select a user defined (on demand) report template.

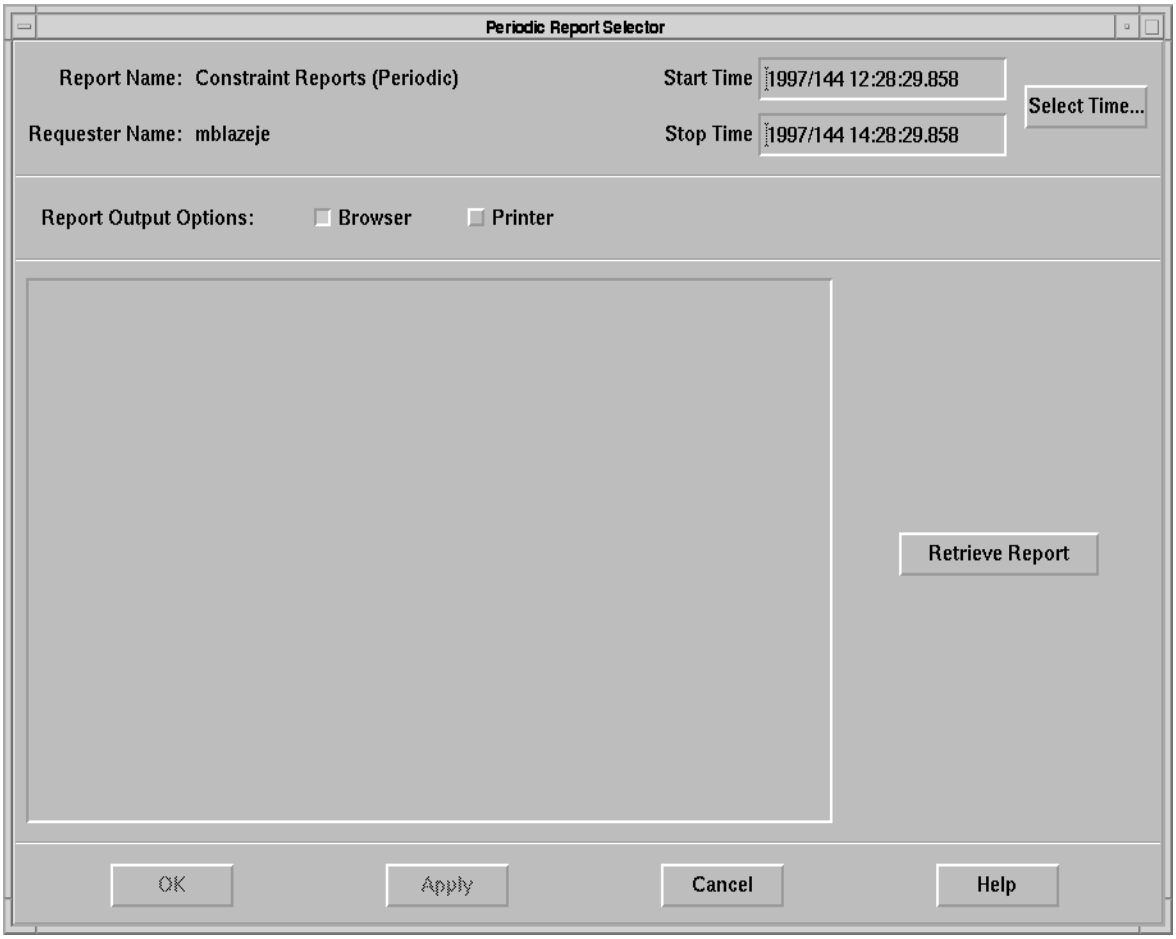


Figure 7.12.1-1. Periodic Report Selector Window

Click **On Demand**, select a report template from the list of available reports and click **OK**. The Report Selector window closes and the On Demand Report Selector window opens (see Figure 7.12.1-2).

or

Select a user defined (on demand) report template and leave the Report Selector window open.

Click **On Demand**, select a report template from the list of available reports and click **Apply**. The On Demand Report Selector window opens (See Figure 7.12.1-2). The Report Selector window remains open in the background.

To retrieve a report based on the Selected Report Template:

1. **Search for subreports created between a specified start and stop time.**

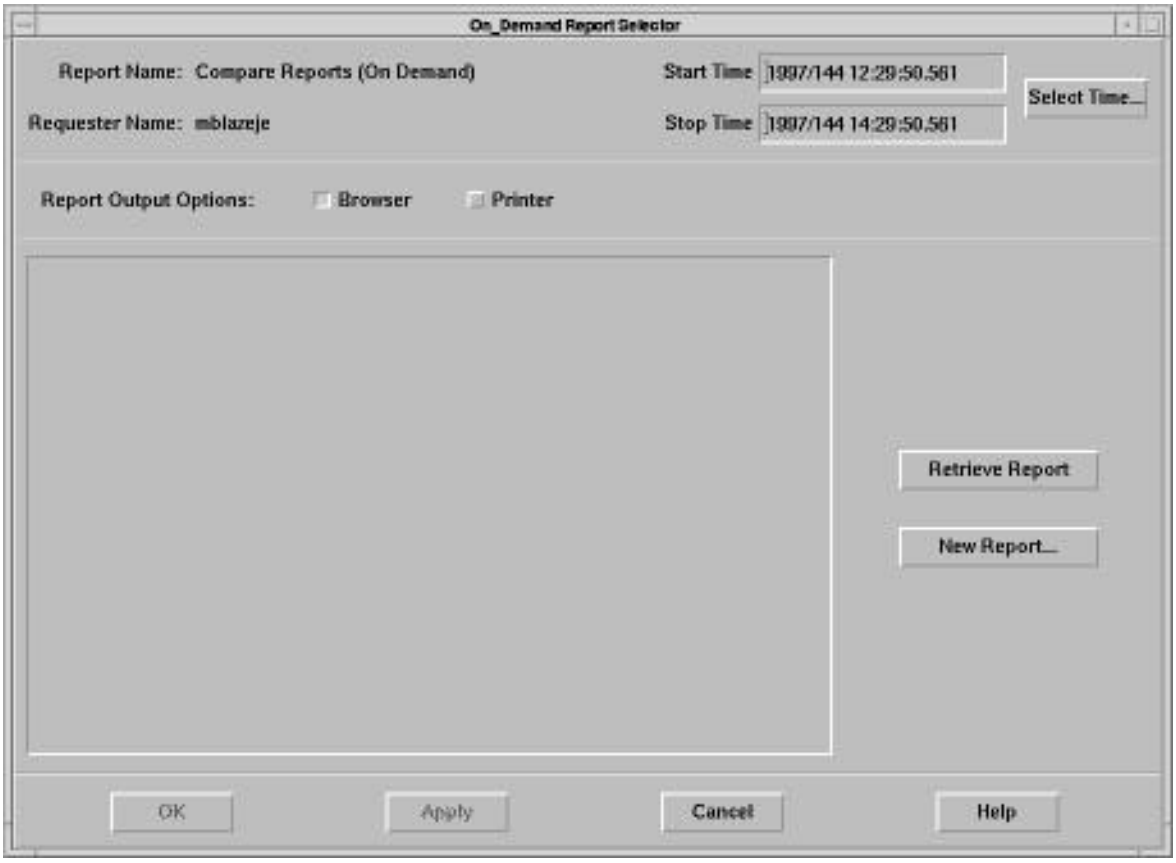


Figure 7.12.1-2. On Demand Report Selector Window

Enter the time span in the Start Time and Stop Time text boxes in the On Demand or Periodic Report Selector window in YYYY/DDD HH:MM:SS format.

or

Search for subreports created between a user specified start and stop time.

Click **Select Time…** and specify the start and stop times on the Pair Selector dialog box (see Figure 7.12.1-3).

2. **Retrieve a list of subreports based on the report template**.

   Click **Retrieve Report**.

   A list of subreports based on the report template and created between the start and stop times indicated are displayed in the Report Selector window.

To edit or print a report:

Subreports generated via the Report Generator can be viewed, edited, and locally saved via the Netscape browser. The file template itself may not be edited, only the local copy of the file.

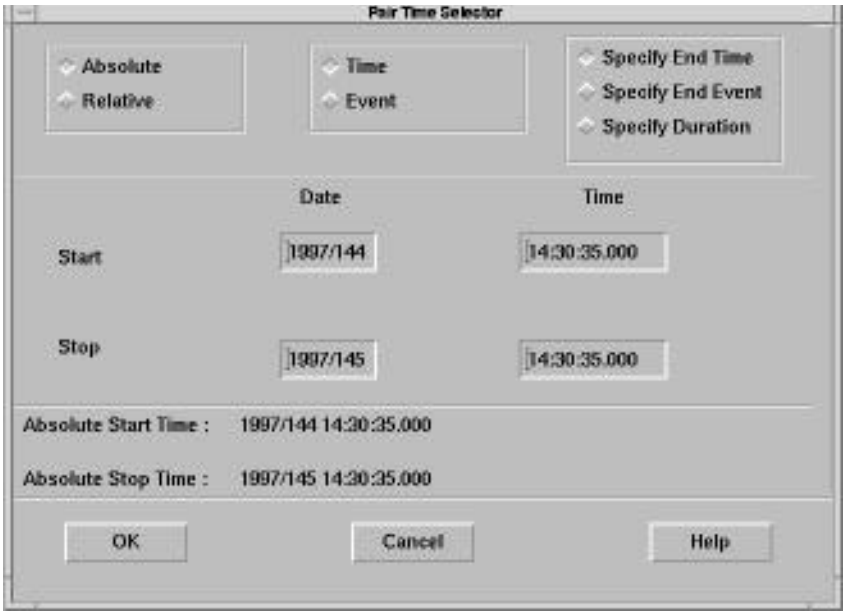


Figure 7.12.1-3. Pair Time Selector Dialog Box

1. **Select a system or user defined report template from the Report Selector window and click OK**.
2. **Select a subreport**.

   Highlight a subreport in the list of available subreports on the Periodic or On Demand Report Selector window.
3. **View, edit, or save the subreport to a local directory**.

   Select **Browser** as the output option on the Periodic or On Demand Report Selector window.

   The Netscape browser opens and the selected file is open in the Netscape window.
4. **Print the report**.

   Select **Printer** as the output option on the Periodic or On Demand Report Selector window.

7.12.2 Generate a New On Demand Report

A new, on demand report may be generated based on an existing report template. Depending on the report template selected, you may be prompted to specify additional parameters for the data contained in the report.

1. **Select a user defined report template from the Report Selector window and click OK**.

   The On Demand Report Selector window opens.
2. **Click New Report… on the On Demand Report Selector window**.

   The On Demand Report Specification window opens (see Figure 7.12.2-1). Depending on the report template selected, the On Demand Report Specification window will prompt you

for a variety of parameters. Some report templates require only a start and stop time, while others require several parameters.

Note that the time span entered in the Start Time and Stop Time text boxes or via the Pair Time Selector dialog box reflects the actual time when the data was collected, not the file creation time.

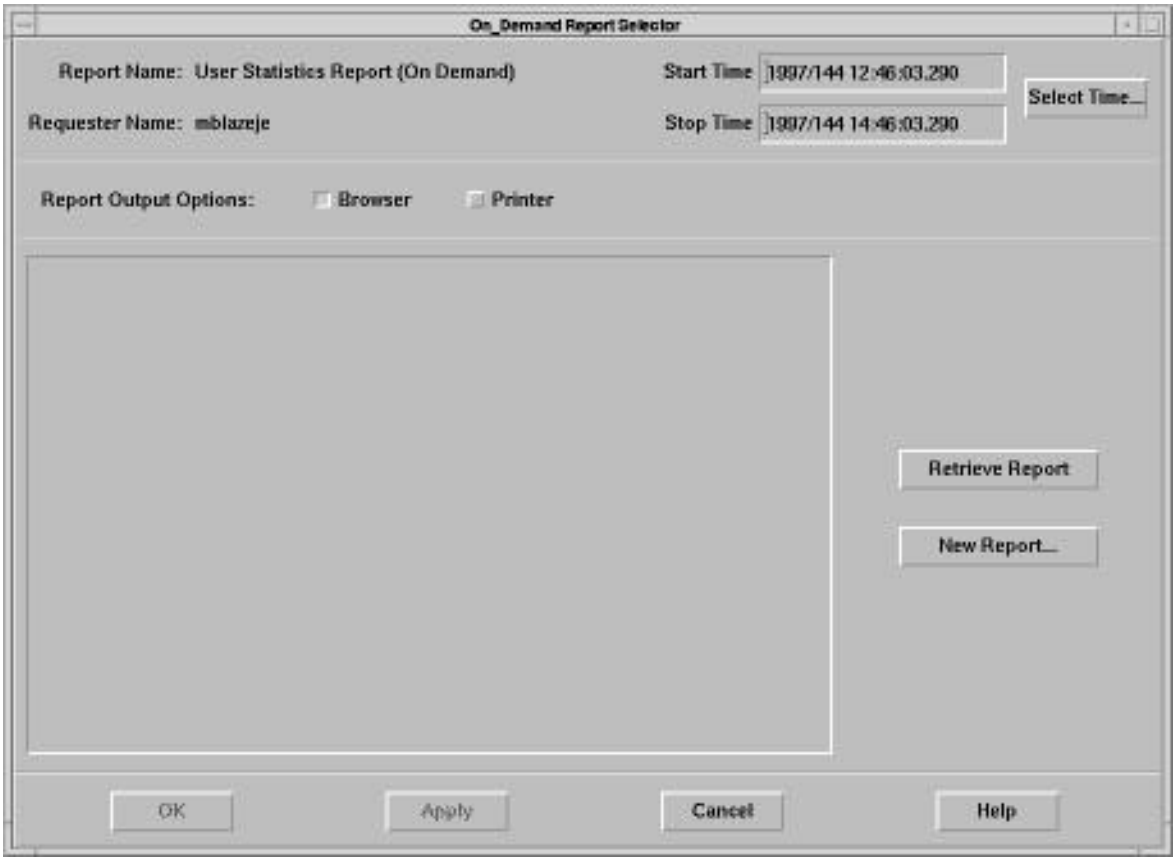


Figure 7.12.2-1. On Demand Report Specification Window

3a. **If you specified Analysis as the report category**.

If you selected **ANA** as the report category on the Report Selector window, you will be prompted for one or more of the following parameters:

a. **Standing Order**. Click **Standing Order...** to generate the report on a routine basis to reflect data collected during a specified time period, such as between 4 a.m. and 6 a.m. daily.

b. **Directory**. Type a directory path designating the output destination for the report.

c. **File**.3 Specify a file name for the report.

d. **Interval**. Select the interval during which data was gathered from the options on the pull-down menu **Orbit Day**, **Orbit Night**, **Full Orbit**, **Daily**, **Monthly,** or **Mission To Date**.

e. **Data Set**. Type the file name for an analysis file generated via the Analysis Request Builder.

If you selected an Analysis report template prompting you to select parameters' move the parameters to be included in the report into the Selected box as illustrated in Figure 7.12.2-2, or filter parameters as described in the following text.

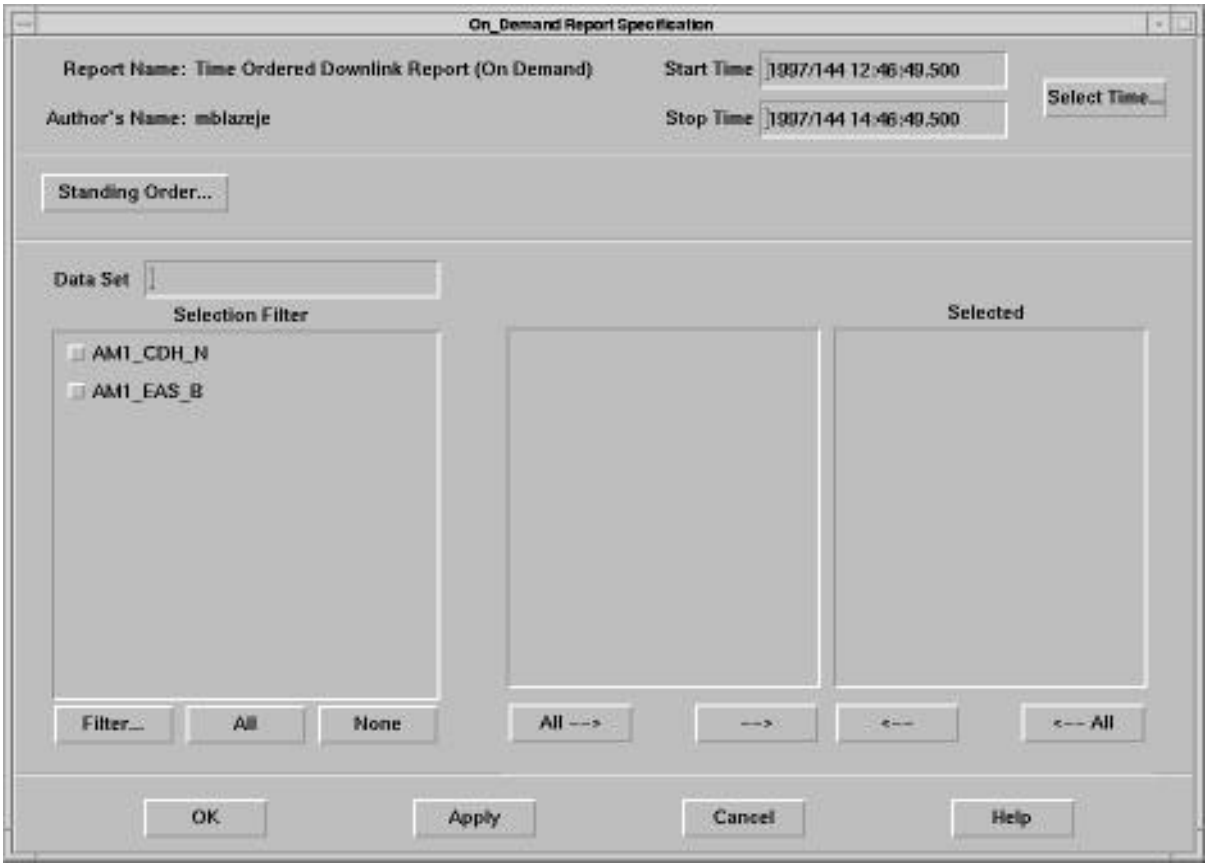


Figure 7.12.2-2. On Demand Report Specification Window for an Analysis Report

f. To create parameter filters, click **Filter…**. The Selection Filter dialog box opens (see Figure 7.12.2-3). Select a spacecraft, instrument, and sample type. Click **Select** to add the filter to the list of selected filters. Click **OK** to close the Selection Filter dialog box and select parameters.

g. Click a selection filter in the Selection Filter box to filter the parameters displayed on the screen. To select the parameters to be included in the report, move them to the Selected box by selecting them and clicking the right arrow button.

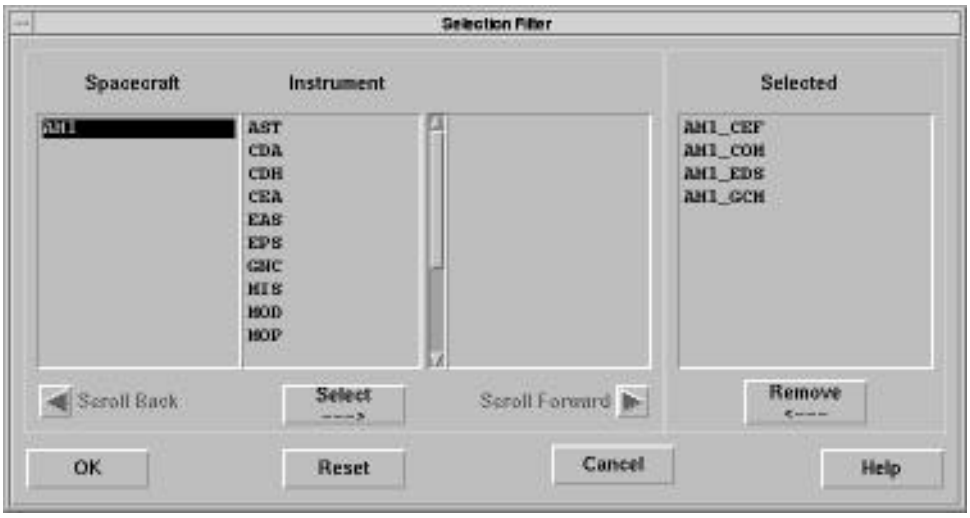


Figure 7.12.2-3. Selection Filter Dialog Box

3b. **If you specified Command Management as the report category**.

If you selected **CMS** as the report category on the Report Selector window, you will be prompted for one or more of the parameters portrayed in Figure 7.12.2-4:

a. Standing Order: Click **Standing Order...** to generate the report on a routine basis to reflect data collected during a specified time period, such as between 4 a.m. and 6 a.m. daily.

b. Report Subtypes for Compare Reports:

1. Dump Image to Dump Image. Compares two spacecraft dumps that have been converted to image files.
2. Dump Image to Ground Reference Image. Compares a spacecraft dump that has been converted to an image file with an image from the Command Management System's Ground Reference Image Model.
3. Dump Image to Load Image. Compares the binary image of a load with a spacecraft dump that has been converted to an image file.
4. Load Image to Ground Reference Image. Compares the binary image of a load with a section from the Command Management System's Ground Reference Image Model.
5. Load Image to Load Image. Compares the binary images of two load files.
6. Table Dump Image to Table Dump Default. Compares a dump from a spacecraft table defined in the PDB with the table's default values as defined in the PDB. The dump will be converted into the format defined in the PDB.

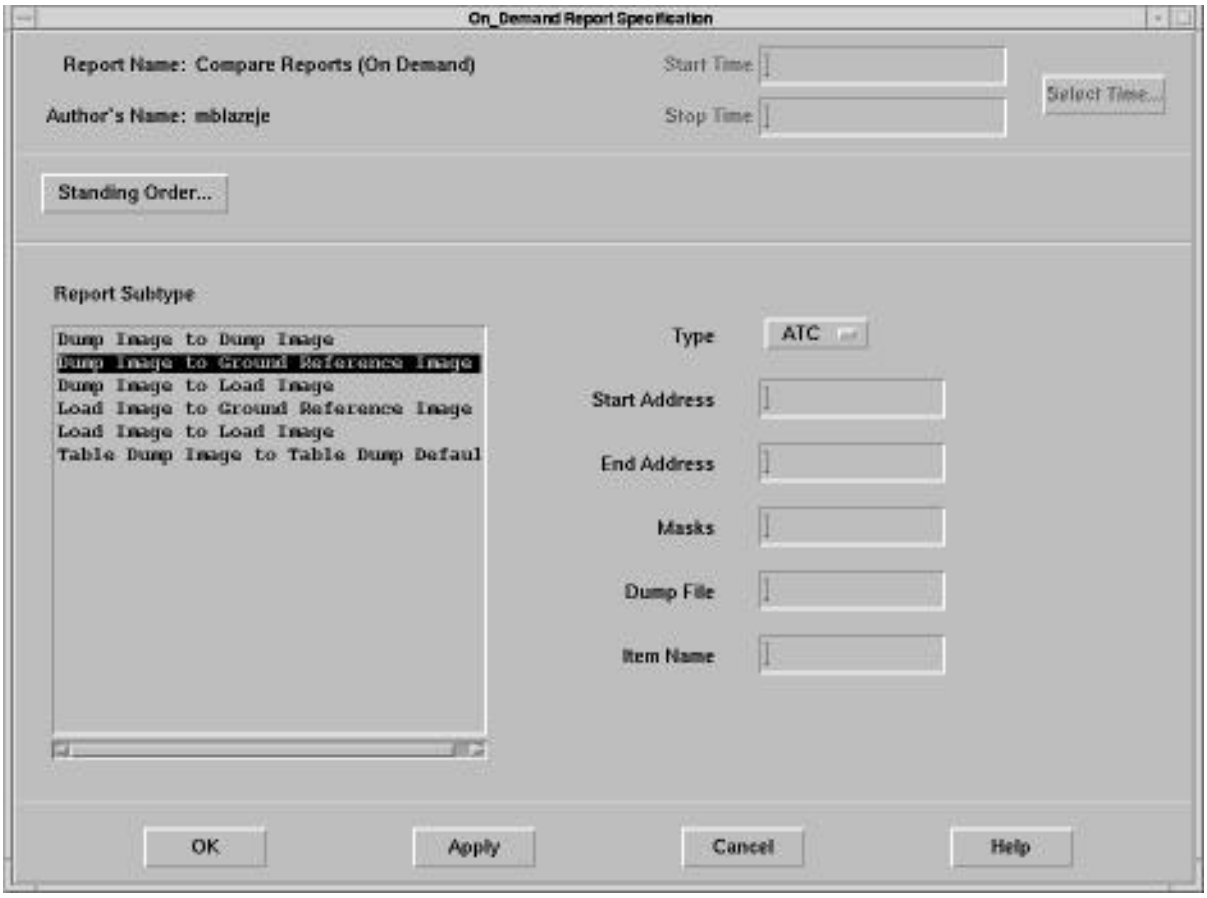


Figure 7.12.2-4. On Demand Report Specification Window for a Dump

c. Report subtypes for comparison reports are listed in the following items. For these report subtypes, the Ground Reference Image Model will add the user-defined start and stop addresses to the beginning location of the appropriate subtype to determine the portion of the Ground Reference Image to use in the comparison.

   1. ATC Command Buffer. The Ground Reference Image Model will use the ATC buffer image for the ATC buffer for the comparison.
   2. Flight Software. The Ground Reference Image Model will use the flight software image for the Flight software for the comparison.
   3. RTS Command Buffer. The Ground Reference Image Model will use the RTS buffer image for RTS buffers for the comparison.
   4. Table Buffer. The Ground Reference Image Model will use the spacecraft tables image spacecraft tables.

d. Type. A**TC** (Absolute Time Command), **RTS** (Real Time Server), **TABLE** (table), **FSW** (Flight Software), or **MP** (Microprocessor).

e. Start Address. The start address in the spacecraft's memory.

f. End Address. The end address in the spacecraft's memory.

g. Image Name. The user-defined name for an image file designated by entering a start and end address.

3c. **If you specified Planning and Scheduling as the report category**.

If you selected **PAS** as the report category on the Report Selector window, you will be prompted for one or more of the following parameters as illustrated by Figure 7.12.2-5:

a. **Standing Order**. Click **Standing Order...** to generate the report on a routine basis to reflect data collected during a specified time period, such as between 4 a.m. and 6 a.m., daily.

b. **Plan Name**. Select either Master Plan or enter the name of a What-if Plan. If a What-if Plan is selected, it is not meaningful to submit a report to reflect accepted or rejected contacts unless the activities in the What-if Plan have been copied from the Master Plan. Only activities in the Master Plan will have Accepted or Rejected status since What-if Plans are not submitted.

c. **NCC Contacts**. Select Accepted Contacts, Rejected Contacts, neither (all contacts in the Master Plan), or both (Accepted and Rejected Contacts). Including accepted or rejected status, eleven status types exist:

1. **Unsubmitted**. On the Master Plan but not sent to NCC.
2. **Pending**. Submitted to NCC, but no response from NCC as yet.
3. **Accepted**. Accepted by NCC.
4. **Rejected**. Rejected by NCC.
5. **Confirmed**. Accepted by NCC and confirmed.
6. **Unsubmitted**. A deleted activity on the Master Plan that had been accepted by NCC.
7. **Unsubmitted Confirmed**. A deleted activity, previously accepted by NCC, which has not been submitted to NCC.
8. **Pending Acceptance**. A deleted activity, previously accepted by NCC, which has not been sent to NCC.
9. **Pending Confirmed**. A deleted activity, previously accepted by NCC and confirmed, which has not been accepted by NCC.
10. **Delete Confirmed**. Confirmation of a deleted activity.
11. **Deleted**. A deallocated activity.

d. **Hours Per Page**. The default or specified number of hours to display per page.

e. **Configuration File**. The default or specified file to use as the report. You can create a configuration file from the Timeline tool by selecting **Save Setup** template from the User Setup menu.

f. **Orientation**. Portrait or landscape.

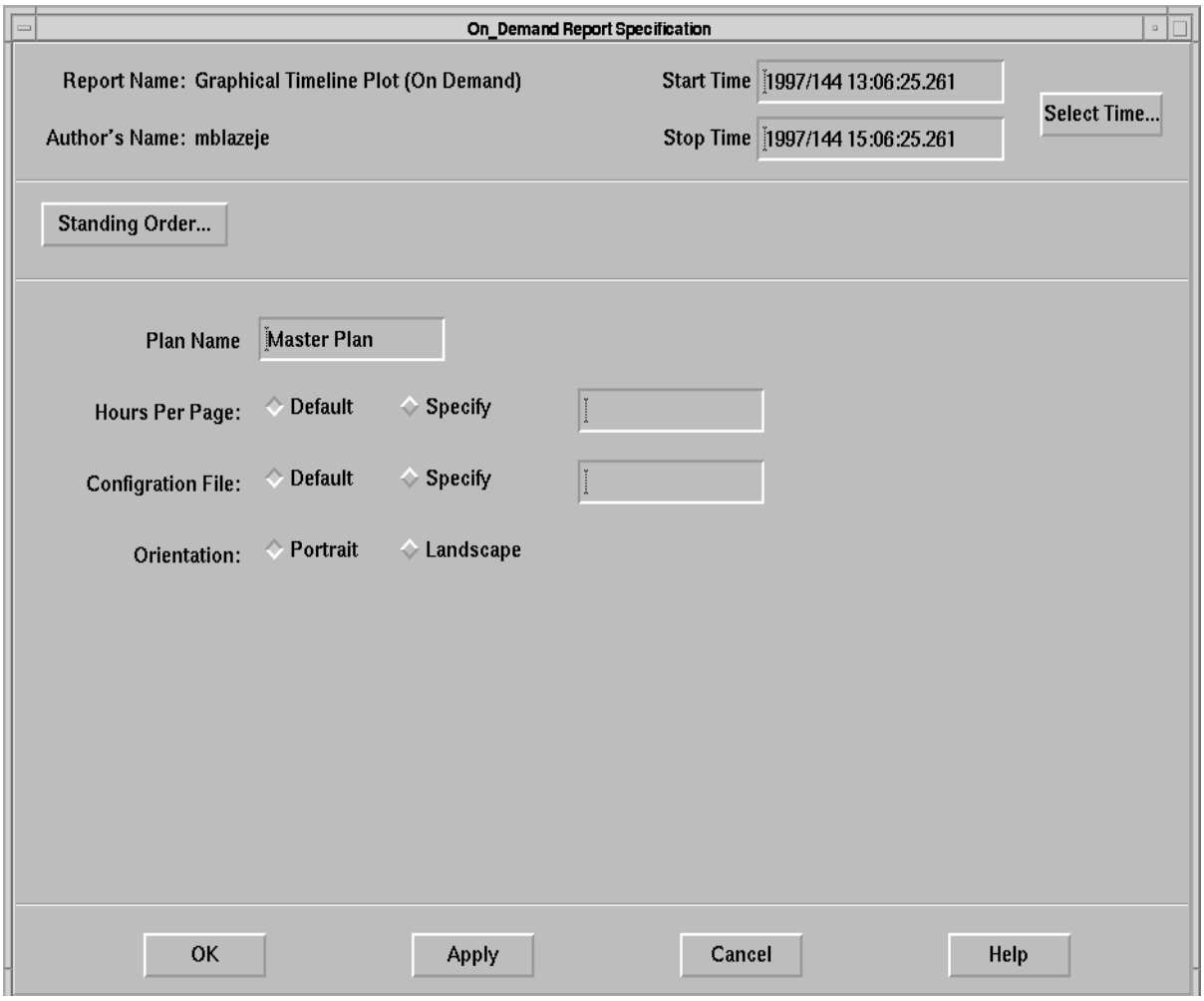


Figure 7.12.2-5. Demand Report Specification Window for a Planning and Scheduling Report

4. **Submit the specification request**.

   Once you have specified the parameters for the report category selected (Analysis, Command Management or Planning and Scheduling), click **OK** to submit the specification request and close the On Demand Report Specification window. The report is generated with a filename that includes the name of the report template, your user name, and the file creation date and time.

   or

   Submit the specification request.

   Once you have specified the parameters for the report category selected (Analysis, Command Management or Planning and Scheduling), click**Apply** to submit the specification request and leave the On Demand Report Specification window open. The

report is generated with a filename that includes the name of the report template, your user name, and the file creation date and time.

5. **Retrieve your generated file**.

   Select the report type (on demand), spacecraft, category, and report template. Enter the time span during which the file was created and then retrieve the report.

6. **View or print your generated file**.

   From the list of subreports in the On Demand Report Selector window, select the report you generated. Select **Browser** or **Printer** as the output option.

7.12.3 Close the Report Generator

Click **Cancel** on the Report Generator window.

7.13 Data Replay Controller

The Data Replay Controller enables you to replay archived telemetry data and control the replay rate. Data played back from the database is displayed via system- or user-defined dynamic pages. Refer to the Display Builder section for instructions on creating, modifying, and making user-defined telemetry (dynamic) pages accessible via the Control window.

The data replay session can be dedicated - active on one userstation, or shared between multiple userstations. Any user may initiate a dedicated replay session or connect to an established shared replay session. However, a shared replay session may only be initiated by a user authorized to take Ground Control Authority. Prior to initiating a dedicated or shared replay session, open a dynamic page to view the telemetry data as described in the following text.

7.13.1 Open a Dynamic Page

Open one or more dynamic pages by clicking **TlmWins…** on the Control window to open the Dynamic Page dialog box. Select a dynamic page from the list and click **OK**. The dynamic pages will display parameter value changes that occurred during the interval specified in the data replay request. Once you have opened dynamic pages to display telemetry data, initiate a dedicated or shared replay session, or connect to a shared replay session.

Open the Data Replay Window:

Open the Data Replay window (see Figure 7.13.1-1) by clicking **Tools...** at the bottom of the Control window. The Tools dialog box opens. Select **Replay Control** from the list of tools and click **OK**. When the Data Replay Controller opens, the options in the bottom portion of the screen will be grayed out.

7.13.2 Dedicated Replay

On the Data Replay Controller window, select the spacecraft, database, data type, replay type (dedicated), and replay rate under Replay String Specification. Enter the year, day, and time to start and stop the telemetry data replay in spacecraft time format. Click **Submit Request** to submit the request. Click **Cancel Request** to discard the request. Once a request for archived telemetry data has been submitted by clicking **Submit Request**, the buttons in the bottom portion of the portion of the Replay Controller window are accessible.

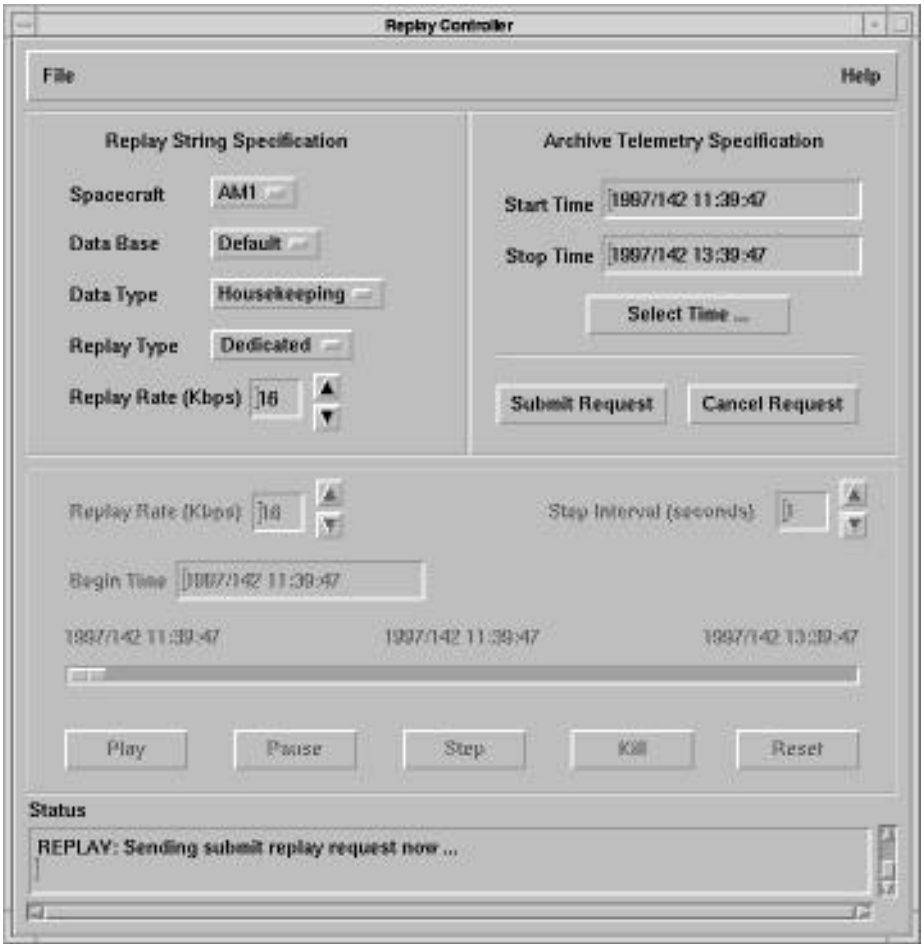


Figure 7.13.1-1. Data Replay Window

To play archived telemetry data from a dedicated logical string:

The default begin time listed in the Begin Time dialog box is the start time submitted in the data replay request. However, you can shorten the playback interval by typing a new begin time that is subsequent to the start time in the Begin Time dialog box. Click **Play**; the data replay begins at the time specified in the Begin Time dialog box.

Monitor the dynamic page as it updates to reflect the telemetry data being played. The start and stop time span for the data replay is displayed in the bottom half of the Replay Controller window. As data plays, its time is displayed between the start and stop times, and the slider bar moves from left to right. To move ahead or behind in the replay time span, click the slider bar and drag it to the left or right.

Pause the replay by clicking **Pause**. Adjust the replay rate (in kilobits per second) by clicking the up or down arrow next to the Replay Rate dialog box. Click **Play** to play the data at the newly entered replay rate. To play the data starting from the begin time, click **Reset**.

To step through archived telemetry data:

Stepping through archived telemetry data enables you to play segments of the data span 1 to 59 seconds long. Drag the slider bar to the starting point for the step. Select a duration for the step interval in seconds by clicking the up and down arrows next to the Step Interval dialog box. Click **Step**. The interval plays for the number of seconds specified in the step interval text box and stops. Click **Step** to continue playing segments of the replay interval or **Play** to play the data at the rate specified in the Replay Rate dialog box.

To terminate the data replay session:

End the data replay session by clicking **Kill**. A dialog box opens, requesting that you verify your request to terminate the replay. Click **OK** to terminate the session or **Cancel** to cancel the termination request. The fields on the Replay Controller window return to their default settings, the start and stop times are blank, and the buttons in the lower portion of the window are grayed out.

7.13.3 Shared Replay

To initiate a shared replay session you must be eligible to receive Ground Control authority. Before submitting the request for a shared replay, connect to a logical string in a mirrored configuration, assume ground control privilege for the string you are connected to, create a shared logical string, connect to the newly created string in a mirrored configuration and, finally, assume ground control authority for the string. Detailed instructions are outlined in the following text. To connect to a shared replay session, refer to Section 7.13.4.

To connect to a real-time logical string:

In the command line of the Command Control window, enter the STRING CONNECT directive to associate your user station with the logical string established for the shared replay, for example STRING CONNECT STRING=*100* CONFIG=*MIRROR*. Connecting to the string in a mirrored configuration is a prerequisite that enables you to take ground control.

To assume ground control for the string:

Once you have connected to the string, take ground control by entering the TAKE GROUNDCONTROL directive in the command line of the Command Control window. The string's three digit identifier follows the command, for example: TAKE GROUNDCONTROL STRING=*100*.

To create a shared logical string:

Enter the STRING CREATE directive in the Control window command line: STRING CREATE *REALTIME* SPACECRAFTID=*AM1* DATABASEID=*1.0* MODE=*OPERATIONAL* SERVER=*1*.

To submit a request for shared replay:

On the Data Replay Controller window, select the spacecraft, database, data type, replay type/server [shared/real-time server 1 (**RTS1**), 2 (**RTS2**), or 3 (**RTS3**)] and replay rate under Replay String Specification. Enter the year, day, and time to start and stop the telemetry data replay in spacecraft time format. Click **Submit Request** to submit the request. The submission of the request for shared replay will result in the creation of a shared logical string. Click **Cancel**

Request to discard the request. The buttons in the lower portion of the Data Replay Controller are accessible once the request has been submitted.

To start the data replay controller:

Open the Data Replay window by clicking **Tools...** at the bottom of the Control window. The Tools dialog box opens. Select **Replay Control** from the list of tools and click **OK**. When the Data Replay Controller opens, the options in the bottom portion of the screen will be grayed out.

To play archived telemetry data from a shared logical string:

If you established control of the shared string through the TAKE GROUNDCONTROL directive, you control the playback of telemetry data associated with that string. Other users may connect to the string and monitor the replay of telemetry data.

The default begin time listed in the Begin Time dialog box is the start time of your request. However, you can shorten the playback interval by typing a new begin time after the start time in the Begin Time dialog box. Click **Play**; the data replay begins at the time specified in the Begin Time entry box.

Monitor the dynamic page as it is updated to reflect the archived telemetry data. The start and stop time span for the data replay is displayed in the bottom half of the Replay Controller window. As data plays, its time is displayed between the start and stop times and the slider bar moves from left to right. To move ahead or behind in the replay time span, click the slider bar and drag it to the left or right.

Pause the replay by clicking **Pause**. Adjust the replay rate (in kilobits per second) by clicking the up or down arrow next to the Replay Rate text box. Click **Play** to play the data at the newly entered replay rate. To play the data starting from the begin time, click **Reset**.

To step through archived telemetry data:

Stepping through archived telemetry data enables you to play segments of the data span 1 to 59 seconds long. Drag the slider bar to the starting point for the step. Select a duration for the step interval in seconds by clicking the up and down arrows next to the Step Interval dialog box. Click **Step**. The interval plays for the number of seconds specified in the Step Interval dialog box and stops. Click **Step** to continue playing segments of the replay interval or **Play** to play the data at the rate specified in the Replay Rate dialog box.

To terminate the shared data replay session:

When all users are disconnected from the shared logical string, you may terminate the shared replay session by clicking **Kill**. A dialog box opens, requesting that you verify your request to terminate the replay. Click **OK** to terminate the session or **Cancel** to cancel the termination request. The fields on the Replay Controller window return to their default settings, the start and stop times are blank, and the buttons in the lower portion of the window are grayed out.

7.13.4 Connect to a Shared Replay Session

Open the Command Control window by entering TOOL Command_Control in the ECL command line of the Control window, or by selecting the Command Control window from the Tools menu of the Control window. Enter the STRING CONNECT directive to associate your userstation with the logical string established for the shared replay. Your connection to the string may have

either a mirrored or tailored connection, depending on preference. Mirrored connections inherit the configuration defined by the Ground Controller for the string, while tailored connections enable you to tailor the string's configuration.

To monitor telemetry via display pages:

Monitor data played back from the database via system- or user-defined dynamic pages.

7.14 Schematics Definition

RTWorks is a suite of commercial software products you access via the **Schematic Builder** and **Schematic Display** options on the Tool Selection box to create schematic pages displaying telemetry mnemonics. Like a dynamic page, display items are placed on the schematic page and associated with parameters. For Release B, the drawings and graphs on a schematic page display parameters from logical string 100 only. It is not necessary to connect to string 100. The connection to the string is automatically accomplished by the software. This section presents a brief overview of a subset of the capabilities of RTWorks. For complete information on creating schematic pages, refer to RTDraw documentation.

7.14.1 Compose a Schematic Page

A schematic page contains a combination of graphs, drawings, and icons that may be customized to display data from parameters. To create a schematic page, the first step is to add graphs associated with parameters to the page. Once the page is saved, these graphs can be customized to display the data in a wide variety of user-defined formats.

1. **Start the schematic display builder (see Figure 7.14.1-1)**.

   Click **Tools...** at the bottom of the Control window. The Tools dialog box opens. Select **Schematic Display** from the list of tools and click **OK**.

2. **Create a schematic page**.

   Click **Compose** in the upper left corner of the RTWorks window.

   The RThci Compose window opens (see Figure 7.14.1-2).

3. **Select a parameter**.

   Select a parameter from the list on the right of the Compose window.

   This parameter will be associated with the next graph you place on the page.

4. **Select a graph format**.

   Select a graph format from the options listed under Graph type. For information about graph types, refer to RTDraw documentation.

5. **Add a graph to display the parameter**.

   Click **Create Graph** and position the mouse pointer in the area of the Compose window where you wish to place the graph. Press the left mouse button, drag the mouse pointer to create a square or rectangle the size of the graph and click the left mouse button. Repeat steps 3, 4, and 5 to select additional parameters and to associate them with graphs.

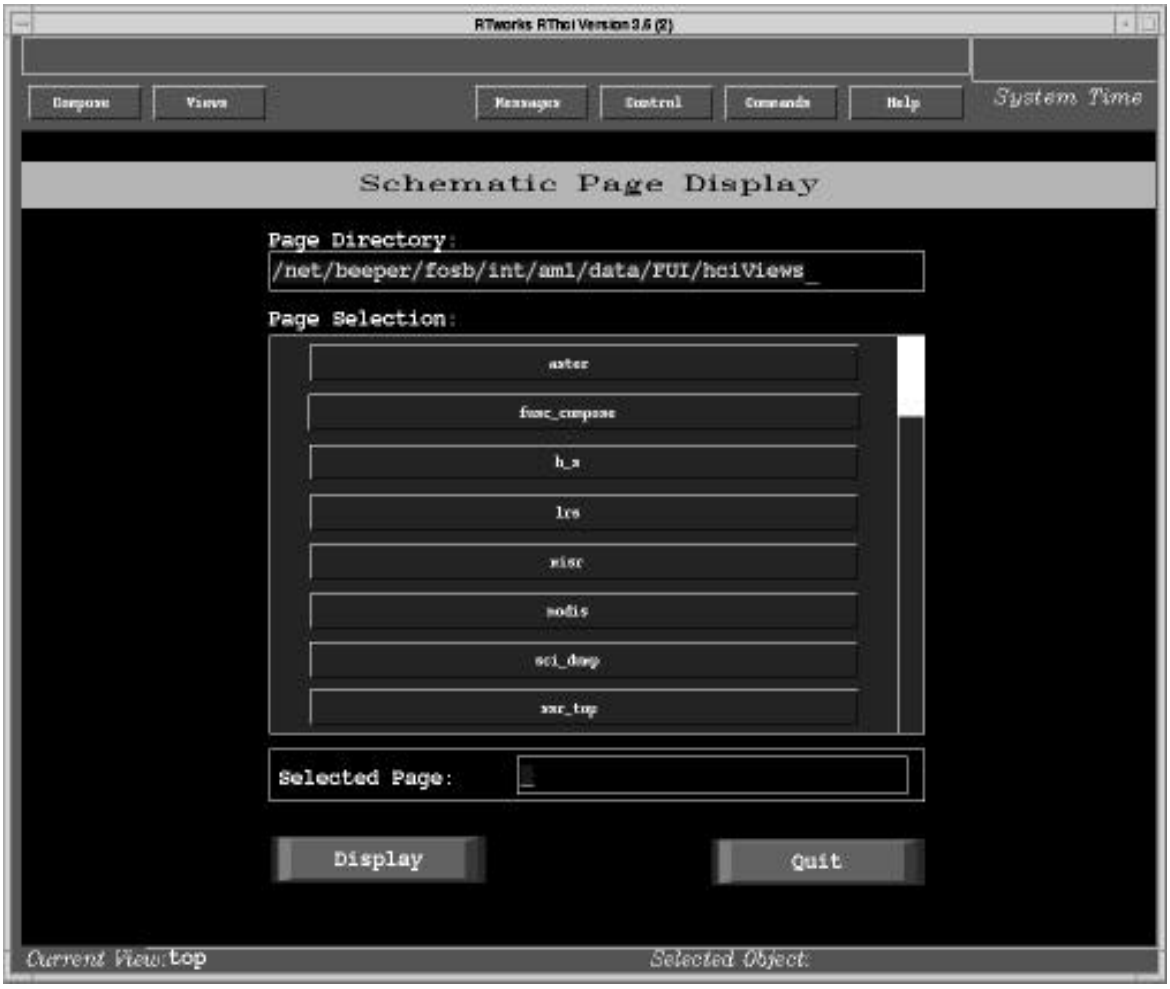


Figure 7.14.1-1. RTWorks Window

6. **Save the schematic page**.

   Position the mouse pointer inside the **Save As** box and click the left mouse button. Type a file name in the box and press <Enter>.

7. **Close the Compose window**.

   Click **Close**.

   The Compose window closes.

7.14.2 Customize a Schematic Page

Once a page contains graphs associated with parameters, the page recognizes the parameters. More graphs and schematics can be created to display the parameters, and previously created shapes, icons, or drawings can be edited to display the parameters. Refer to RTDraw documentation for instructions on customizing graphs to display telemetry in a variety of formats.

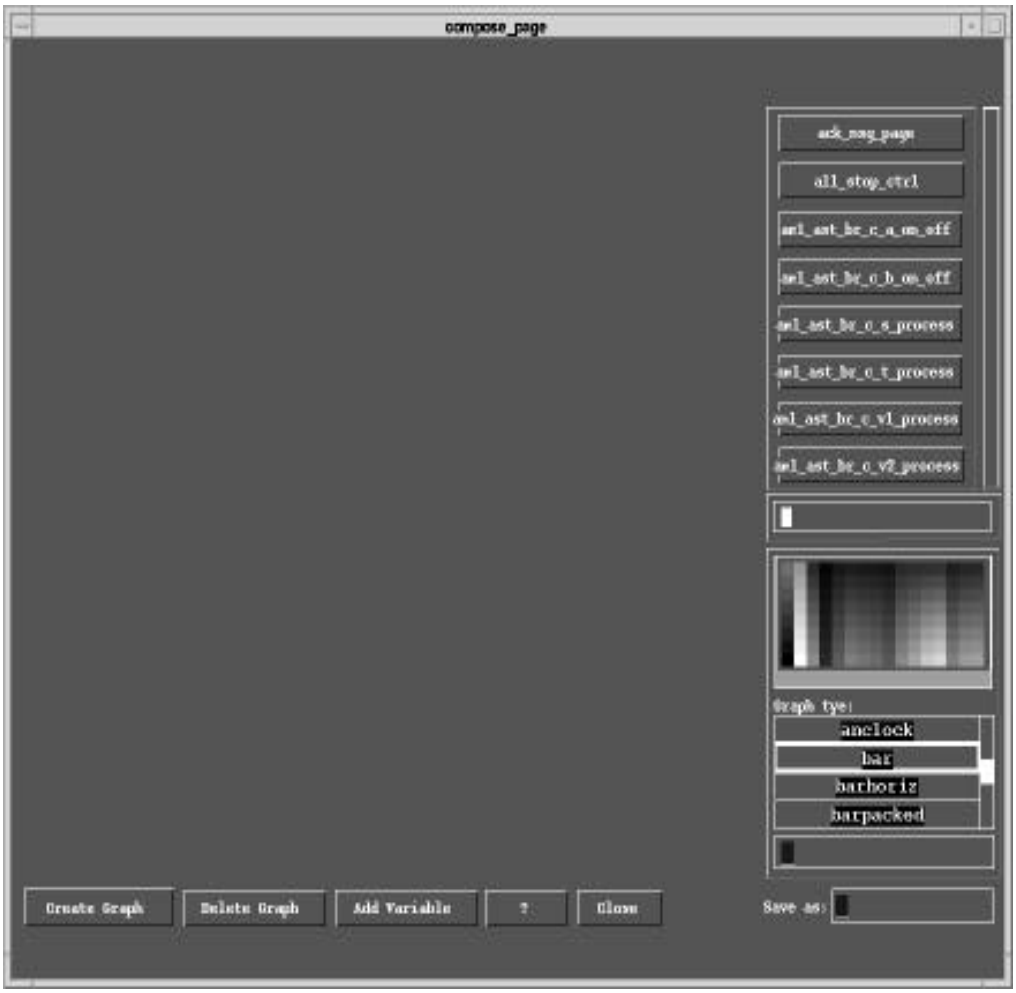


Figure 7.14.1-2. Compose Window

1. **Start the schematic builder and open a page**.

   Select **Schematic Builder** from the Tools menu of the Control window and click **OK**.

   The RTDraw window opens (see Figure 7.14.2-1).

2. **Open the page previously saved from the RThci Compose window**.

3. **Add new display items and associate them with parameters**.

   Refer to RTDraw documentation for instructions on adding display items and associating them with parameters.

4. **Customize graphs to display parameters in a variety of formats**.

   To reformat graphs which are associated with parameters, refer to the RTDraw documentation. Data for parameters displayed on the page are listed under the Data > menu.

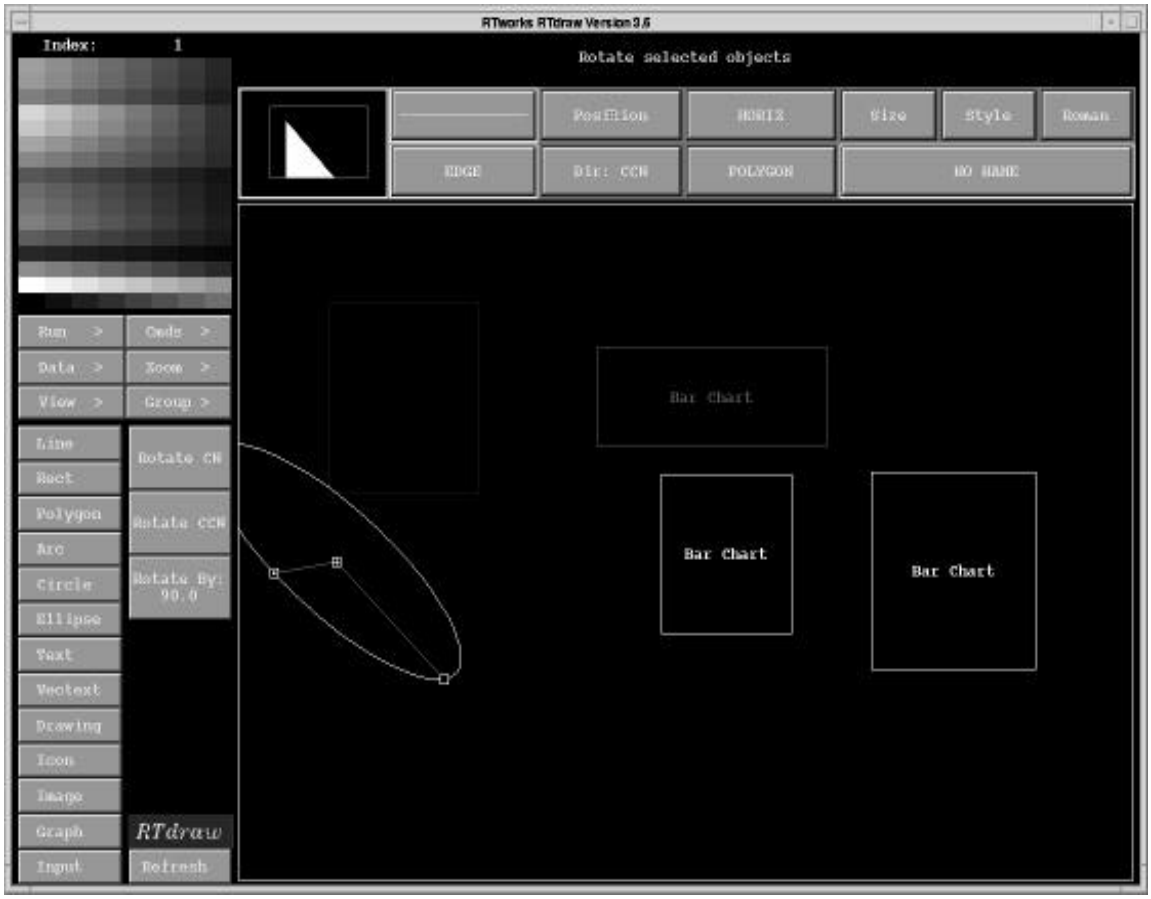


Figure 7.14.2-1. RTDraw Window

7.14.3 Monitor Telemetry Mnemonics on a Schematic Page

1. **Ensure the RTWorks Data server is running**.

   Enter the following directive in the command line of the Control window to start the RTWorks Data server if it is not running:

   EA -String ID=100 -ODF_ver1.0

2. **Start the schematic display**.

   Select **Schematic Display** from the Tools menu of the Control window and click **OK**.

   The RTWorks window opens.

3. **Select the page to display in the Page Selection box and click Display**.

   The schematic page opens (see Figure 7.14.3-1). The graphs and drawings update automatically to reflect incoming data from string 100.

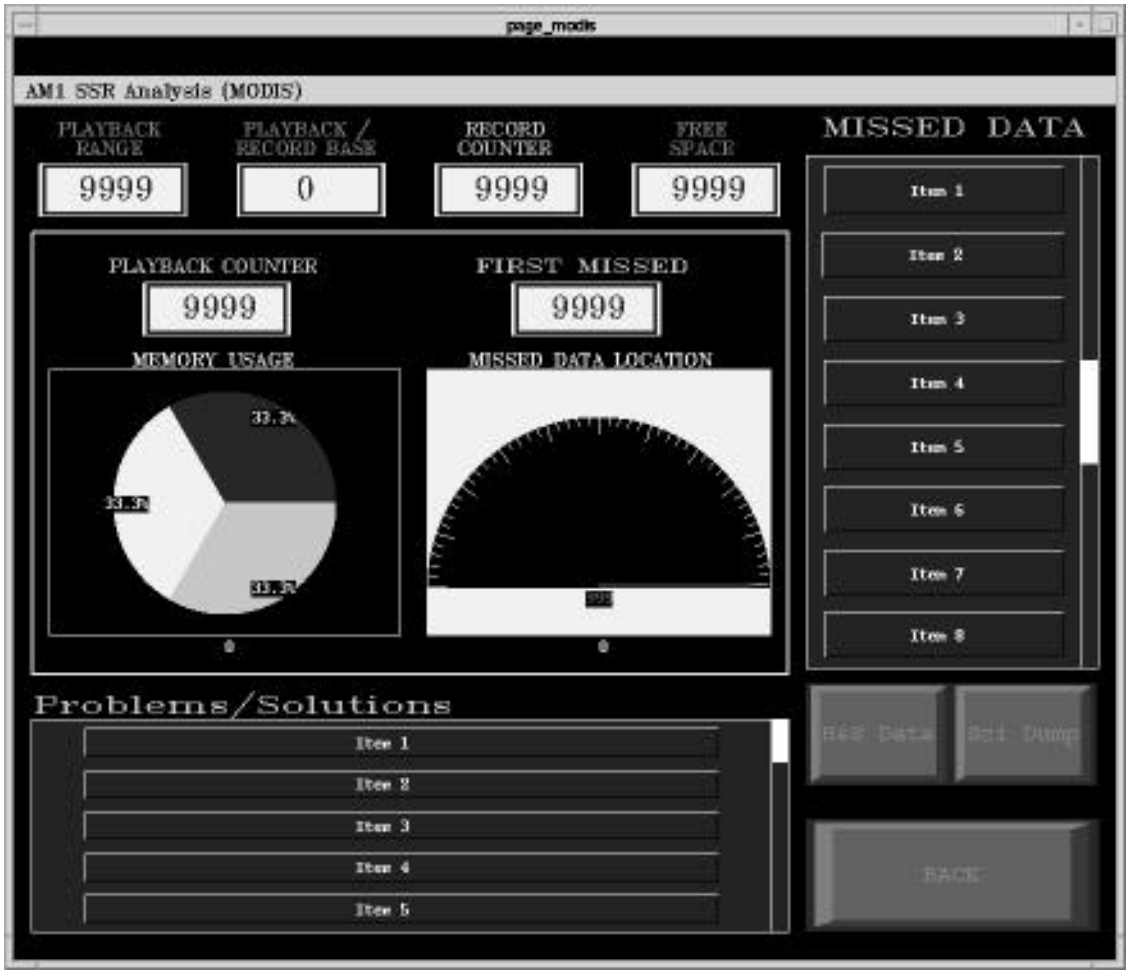


Figure 7.14.3-1. Schematic Page

7.14.4 Close RTWorks

Click Quit on the RTWorks window.

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